

SKYWAYS

Including THE FLYING SPORTSMAN

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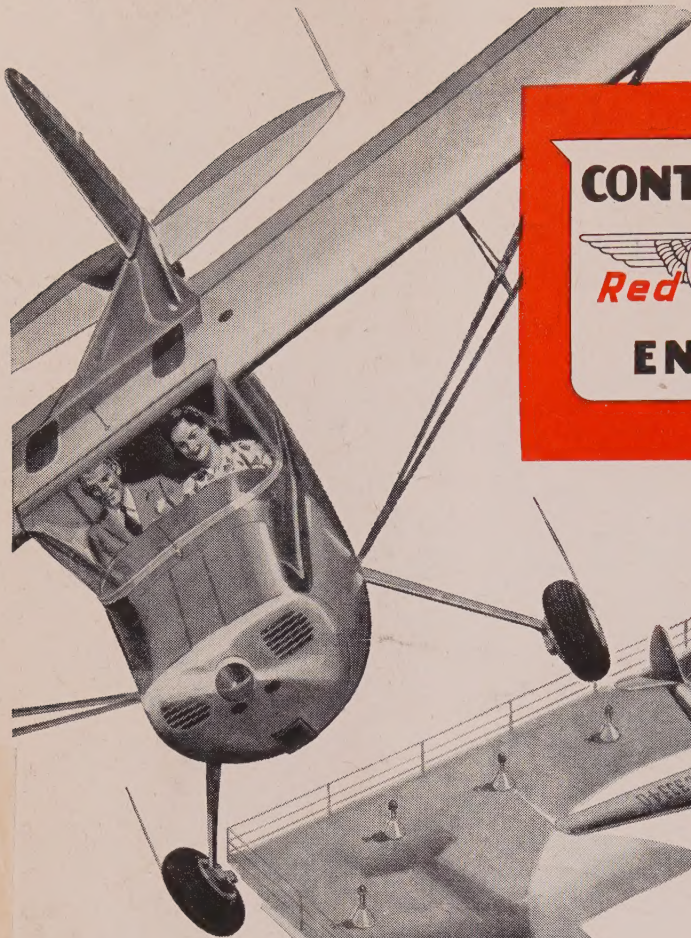


**3 Opportunities
in AVIATION
at 1: GROUND JOBS**

See page 34

ANC

DECEMBER 1947 **25¢**



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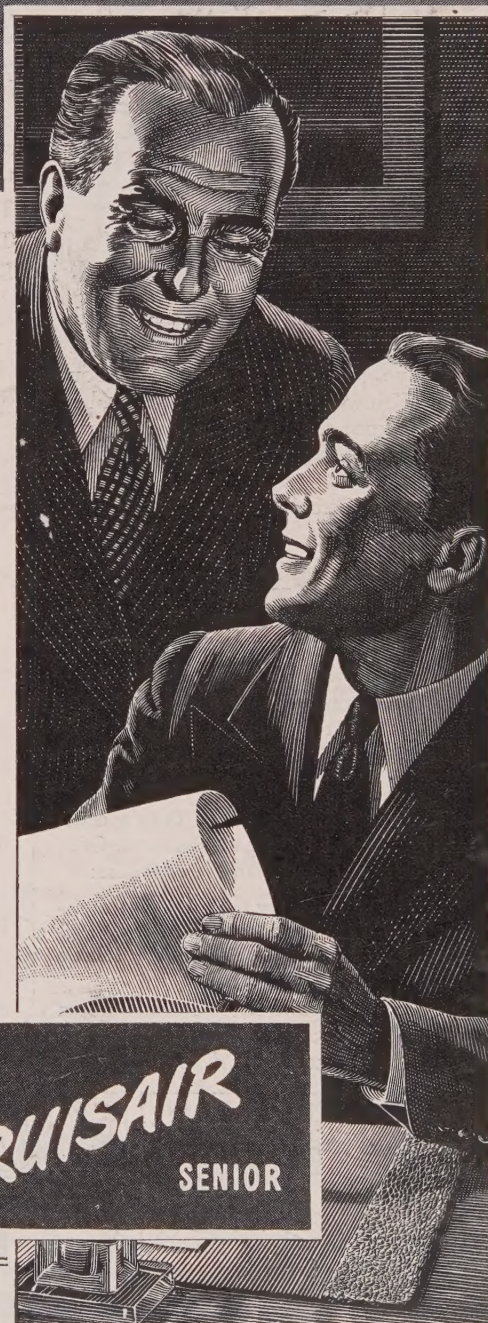
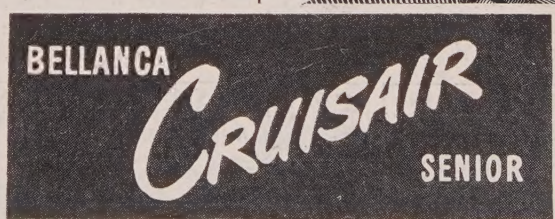
miles per hour. Range: more than 600 miles. Average gas consumption is 16 miles per gallon!

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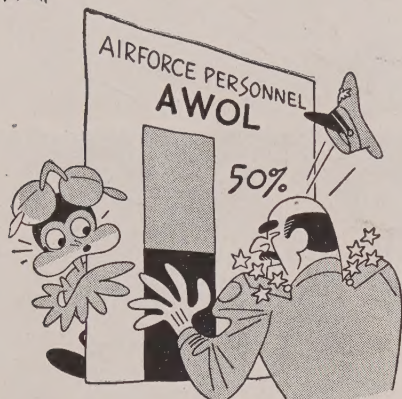
GETS THERE ON TIME . . . LANDS ON A DIME

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The Birdmen's Perch

By *Major Al Williams, ALIAS, "TATTERED WING TIPS,"*
Gulf Aviation Products Manager, Gulf Bldg., Pittsburgh 30, Pa.



We're going to try to join our own club, the Perch Pilots.

We've got a Little Known Fact About Well Known Planes, ourselves. And as anyone knows, one of these Little Known Facts good enough to print (and accompanied with *proof!*) gets a fella a commission as Perch Pilot (bottom rung).

And our "Fact" is very funny, we think...

"At one time 50% of the Air Forces were AWOL!"

Before all the brass in Washington screeches down on our neck, we'll explain that this happened in 1908 when the Air Forces consisted of 2 men.

And one of 'em went AWOL, like we said!

We're sending a Perch Pilot's commission to Joe Hardman, Portland, Ore., too. It's his second, and it's because:

"The P-82B, Betty Joe, took off weighing 30,000 lbs., on its record-breaking Honolulu to New York flight!" That's more weight than a DC-3!

Now here's one more Little Known Fact. We think it's stupendous—if true. But the lad who sent it *did not send proof.*

So we will neither commission him, nor vouch for the accuracy of:

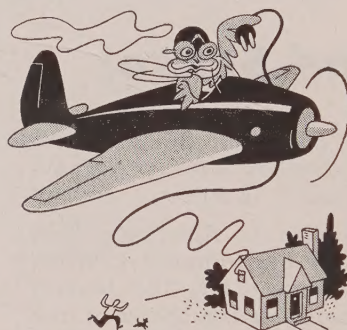
"If a B-29 were landed without brakes, it would coast for nearly 15 miles!"

Okay, gentlemen, that's the general idea. "Facts" like these, sent to the address on the top of the page—and *proved!*—may win you the rare privilege of joining the hallowed hall of Perch Pilots.

And an impressive-type commission, suitable for framing or covering holes in the wall.

THE BIRTH OF IGNITION

They're pulling a new stunt with aircraft generators.



They've got 'em delivering AC current, same kind you've got at home.

One of the big features of these AC generators is that they deliver 50% more power per lb. than DC units.

Naturally, these generators which do more work per lb. remind us of our favorite lubricant, Gulfpride Oil.

Gulfpride does more lubricating per gallon because of Gulf's special Alchlor Process, an additional purifying treatment which we give to *already refined* oils.

This additional step is so ruthless to the weaker hydrocarbons which make carbon, gum, and sludge that it removes as much as a pint of them from each

gallon of *already refined* oil.

And what's left is Gulfpride Oil.

No wonder it does more actual lubricating per gallon!

Don't take our word for it... *try it and see!*

BOUQUET

We do an awful lot of talking on this page about Gulfpride Oil and that Good Gulf Aviation Gasoline.

And maybe not nearly enough about the guy you get them from!



We're pretty proud of the men who handle Gulf Aviation Products. To our way of thinking, their shops, planes and hangars are almost always a little better run and better looking.

It's a very simple matter for us to say you'll get careful, efficient, clean service and attention when you "Fly In At The Sign Of The Orange Disc."

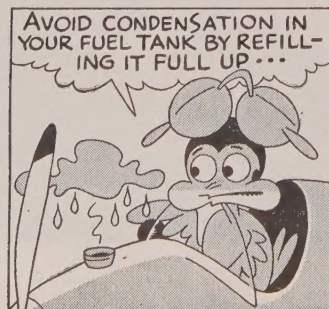
But it's these Gulf Aviation Dealers who back us up and deliver it!

We're very fond of this gang and you'll see why in a minute whenever you Fly Gulf!

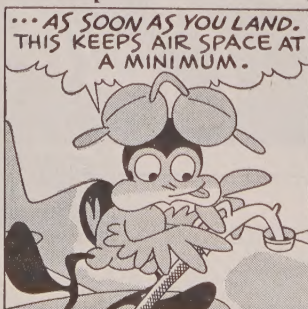
Gulf Oil Corporation and Gulf Refining Company... makers of



GULF AVIATION PRODUCTS



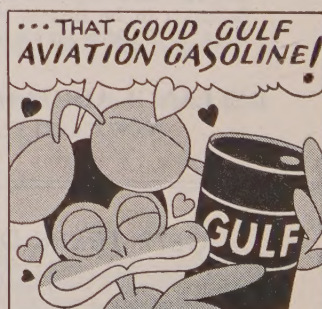
AVOID CONDENSATION IN YOUR FUEL TANK BY REFILLING IT FULL UP...



...AS SOON AS YOU LAND. THIS KEEPS AIR SPACE AT A MINIMUM.



ALSO BE CAREFUL TO AVOID HAVING TANKS FILLED WITH ANYTHING BUT...



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SKYWAYS

Incorporating Air News

Cover: Pitts Special by S. B. Jones

et for the Fleet	Robert Franklin	18
<i>Detailed story of the Navy's conversion to jet-propelled aircraft</i>		
Air Race Winners		21
<i>These are the trophy takers at this year's National Air Races</i>		
Built-In Skyhook	Jeff Lyon	22
<i>How to stretch the range of your plane beyond its set maximum</i>		
For Winter Storage	Jerry Leichter	24
<i>Tips on protective care of your plane during the winter season</i>		
HAT		27
<i>Helicopter Air Transport sets stage for future commercial 'coptering</i>		
Flight Instruction Business	C. B. Colby	30
<i>Businessmen make a practical business of today's flight instruction</i>		
Town and Country Commuter	Howard Shaw	32
<i>An airplane supplies utility for this businessman-pilot</i>		
Job Opportunities in Aviation	Alice Rogers Hager	34
<i>Part I: Ground jobs, their requirements, salary and promotion possibilities</i>		
Dilbert	Seth Warner & Robert Osborn	40
<i>The basic bank and turn requires care in airplane handling</i>		
Contest Winners		53
<i>Here are the lucky winners of Skyways three Ercoupes</i>		

Air Your Views	6	Where to Fly	14
Prop Wash	10	Hangar Flying	16
Editorial	12	Plane Service	58

J. FRED HENRY Editor and Publisher
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 ALICE ROGERS HAGER Washington Corresp.

There are two SKYWAYS: English and Spanish

DECEMBER 1947

VOLUME 6, NUMBER 12

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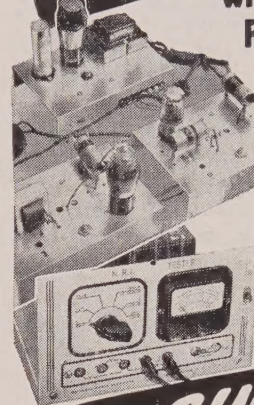
DECEMBER 1947

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Knew Nothing About Radio

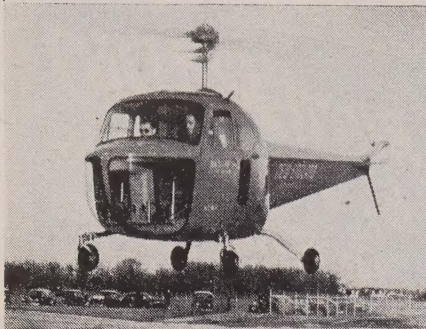
"I knew nothing about Radio when I enrolled. At present I am doing spare time work. I have more than paid for my Course and I have about \$200 worth of equipment which has paid for itself." Raymond Hotcamp, Vandalia, Ill.

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*Special Christmas Rates from
November 10 to January 10.*

See Page 50



AIR YOUR VIEWS

Jump Data

Dear Sirs:

Having recently been discharged from the AAF, I would like to get some information regarding exhibition parachute jumping. Is there a professional jumpers' association or some such similar organization?

I was a control tower operator in the army.

E. S. AAMISTEAD, JR.

Tampa, Florida

We know of just two organizations for parachutists. National Parachute Jumpers Association, Roosevelt Field, Long Island, N. Y., and the Suicide Club, Danials Field, Augusta, Georgia. Joe Crane is president of NAPJA, and Don Marshall heads up the Suicide Club.—Ed.

Nat'l Air Races

Dear Sirs:

Enjoyed your article on the National Air Races. You have a swell mag . . . keep it as is and good luck. I'm flying a P-63 in Nat'l's this year.

K. KNIGHT

Shawnee, Oklahoma

Thank YOU, Mister Knight . . . and congratulations, too, for winning the Tinnerman Trophy in that very hot P-63 of yours.—Ed.

Dear Sirs:

Could you please tell me where I could get information on all entries in the National Air Races.

TED ALLEN

McPherson, Kansas

Suggest you write to National Air Race Committee, Union Commerce Bldg., Cleveland, Ohio.—Ed.

Ticket Costs

Dear Sirs:

Could you tell me something about the cost of getting the following licenses: Student Pilot, Private Pilot, Instructor's, Commercial, Single-engine, sea and land, and Multi-engine, sea and land.

KENNETH NIEMAN

New York, N. Y.

We assume you're referring to cost of flight training. We contacted Safair, Inc., for those costs and obtained the following estimates. These may vary slightly in different localities. However, according to VAA figures, they run about . . .

Private Pilot	\$490.00
Instructor's rating	\$400.00
Instrument rating	\$450.00
Commercial license	\$1,580.00
Private & Commercial	\$2,000.00

The only cost in getting a Student Pilot's per-

mit is that of the physical. This runs between \$5 and \$7.50. When you take your flight test for any of these licenses (Private, Commercial, etc.) the examiner's charge is \$5 for Private Pilot test, and \$10 for Commercial. If an inspector gives the test, there is no fee. Multi-engine time averages between \$35 and \$45 per hour (for Cessna Bobcat), and it usually requires about 13 hours. The Safair school is at the Teterboro Air Terminal, Teterboro, N. J.—Ed.

Tie-Down

Dear Sirs:

I just finished reading Donald Close's article, "Tie-Down for Keeps" in September issue. In addition to the lightweight shovel and ropes, why not carry three empty 100-lb. sacks which could be filled with dirt, sand or stones for that "unexpected" tie-down after a forced landing?

ARTHUR HORN

Bell More, N. Y.

Sounds like a good idea to us.—Ed.

Plane Info

Dear Sirs:

I am thinking of buying a plane which the owner says is an American Eagle. Can you tell me something about this ship?

MARLIN CUNNINGHAM

Muscantine, Iowa

The American Eagle was built in the early '30's (1931, 32, 33, 34) by the American Eagle Aircraft Company, Lambert Field, St. Louis, Missouri. There were several models powered by several different engines, i.e., Kinner, Szekely, Continental, Curtiss, etc. Some of the Eagles were three-place, some were four; all were land biplanes, open cockpit. The OX-5 Curtiss engine that powered some of the Eagles was a 90-hp engine, and it dates back to 1917 and 18. The 1930 three-place Eagle had a gross weight of 1,700 pounds, a cruising speed of from 80 to 90 mph, and a range of about 300 miles. We haven't seen any American Eagles around at the fields in a long time. However, we don't doubt that there are several still flying . . . and doing a good job of it. Might we suggest, though, that you have a licensed A & E look over any used airplane you might consider buying. Then you will be sure of what you're getting.—Ed.

Dear Sirs:

I enjoyed the article "Pylon Pilots," but could you give me some more information on the Gee-Bee ships. Who made them, where, etc.

GEORGE GALGAS

Cleveland, Ohio

About the only information we can give you, Mr. Galgas, is that the Gee-Bee racers were built by Granville & Miller at the Springfield Airport, Springfield, Mass. If we can track down anything else, we'll be happy to send it to you. Maybe some of our readers will offer data.—Ed.

AVIATION • *THE INDUSTRY THAT IS GOING PLACES*

Aviation is going places. Over a thousand new airports . . . nearly two hundred new airliners . . . aircraft registrations almost doubled—all within the past year! Plan your career in a young industry that is still growing . . . that is destined to be among the world's greatest . . . an industry that offers untold opportunities to young men with character, vision and ability backed by thorough, practical training. Spartan can give you that training. It has a faculty of one hundred and fifty highly-trained instructors whose combined knowledge covers every phase of aviation. Their practical experience enables them to know and to teach the practical short cuts that speed production and save time. Back of these instructors are the planes, the instruments and the equipment with which you will work, with additions being made constantly to keep pace with the industry. Here, you receive the individual attention needed to progress as rapidly as you grasp the problems and their solutions. Don't wait! Aviation will not wait! Now is the time to make the decision and start the training that will lead to future security and success in the industry that has the most promising outlook.

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Wherever there are aircraft . . . you'll find Spartan graduates. With the airlines of the world, in factories building power plants, instruments or airframes, in weather stations, on the flying fields, you'll find them; all progressing with knowledge and experience gained at Spartan, the University of Aviation. Spartan has world wide recognition. Here, studying and working together are young men from Iceland, Bolivia, Colombia, Peru, Venezuela, Hawaii, Mexico, Canada, Puerto Rico, Cuba, Belgium, Brazil, Palestine, India and South Africa, as well as from all over the United States. These men are going to be leaders in world aviation.

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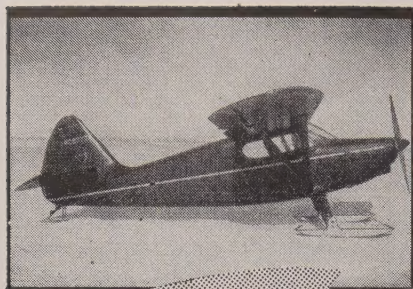
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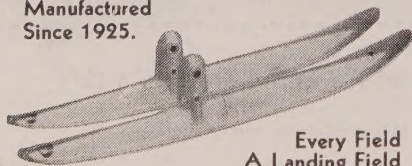
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PROP WASH

Aero Oddities

Self-Service. Pilot R. Roup and Mrs. Roup, en route to Estes Park, Colo., ran low on gas near Ord, Nebraska, couldn't find airport shown on map, so landed in first available open field. Roup found a gas drum, transferred 5 gallons, left \$2 and flew on. (*R. Roup, Milwaukee, Wis.*)

Bull's-Eye. Oregon Chamber of Commerce man, Earl May, had local pilot take him up to drop 2,000 handbills. May and pilot checked wind direction, velocity at their altitude, then tossed handbills. May landed to find that of 16,000 backyards in his town, 90 per cent of handbills had landed in his own yard. (*Van Wormer, Bend, Ore.*)

Site Chooser. Army cadet became lost on first cross-country, when plane ran out of gas, he landed in farmer's field near Jackson, Ala. Year later found town boastful of its first airport . . . the cow pasture where he'd made first forced landing. (*Harris, East Lansdowne, Pa.*)

Photo Flight. Itasca (Texas) photographer bought plane ride to take a picture of hometown for his own private use. Unexpected sale of prints produced enough money for flying lessons, now photog is about ready to check out for private ticket and will be his own pilot on aerial photo hops. (*W. Edney, Itasca, Texas.*)

Floating Log. Pilot Boring flew out over ocean to practice advanced aerobatic maneuvers, log book fell out of pocket, dropped 4,000 feet into ocean. When Boring returned to Cal-Brown school field, he was told log book had been found by swimmer a mile off shore at Redonda Beach. Log book was back in service in time to record the flight during which it took dive. (*J. N. Buckley, Los Angeles, Calif.*)

Milk Call. Nevada, Ohio farmer bought

Aeronca Chief, uses it to run errands from farm to town, five miles away. Town's store's backdoors open on air field, so farmer flies in, taxis almost to main street, dashes in for purchases, then flies home, all in few minutes time. "Going to sell car," says farmer, "it's no use to me anymore." (*G. Reiss, Youngstown, Ohio.*)

Flight Test. Students at Indian Orchard (Mass.) airport spend great deal of time making model planes. As soon as promising new glider is completed, builder takes it up in plane, launches it from open window, follows it down to study its performance. (*K. Boyles, Indian Orchard, Mass.*)

Flying Fisherman. Group of Wisconsin airmen have inaugurated plan whereby fishing guides will fly with fishermen-pilots to point out location of the biggest ones.

Necktie Rescue. When oil filter on new plane he was ferrying leaked, pilot prevented disaster by stuffing necktie into filter, continued flight successfully.

In the Chips. Pilot Russell Schwartz thinks there are more potato chips in the world than anything else. On recent flight he delivered 2½ tons of potato chips to Fairbanks, Alaska, from Seattle. His Northern Airlines plane was so filled with them, he had to enter cockpit via small forward loading hatch. (*H. Helfer, Arlington, Va.*)

Att'n Readers:

If you have any news-note oddities pertaining to aviation, send them to SKYWAYS, Box 17, 444 Madison Avenue, New York 22, N. Y. Five dollars will be paid the sender of each "oddy" printed. Contributions cannot be returned unless accompanied by stamped addressed envelope. The decision of the editors is final.

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26,000 pilots and 7,500 aviation mechanics trained for U. S. Army and Navy Air Forces.
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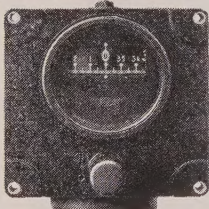
ELECTRICAL

Here's a tip on this one—how fast? Yes, it falls within the "electrical group." What is it? Students at American Schools of Aircraft Instruments learn how to service and maintain all major types of Aircraft Instruments.



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A Strong Air Force

AN EDITORIAL

THE red-shadow of the Hammer and Sickle creeps day by day more rapidly across a despairing world. More and more, it assumes the aspect of the twilight of Democracy. More and more, we are trying to build a sea-wall of dollars in the path of the flood, chinked with an unscientific mixture of self-interest and good will to our threatened neighbors.

It isn't enough, so long as Russia and her satellites present a solid and antagonistic will to win the decision. There is no indication that they will change their tactics in the undeclared war against us. Make no mistake it is war they are waging—so far the war of diplomatic encirclement, the pattern which Hitler used when he moved into the Ruhr and into Austria. It is the slyest, the shrewdest and the deadliest pattern known to power-mad nations. And in the end—nothing stops it but the bodies and blood of men.

Dollars are cheaper than blood, if we are willing to spend enough of them in time. With all our problems, we have had a pretty easy time of it here in the United States since VJ Day. We may be short of housing and we may have gotten ourselves into a dangerous spiral of rising prices. Labor and capital have both held back on production. We haven't all the automobiles we want nor all the fancy gadgets we were promised, but we aren't living like rats in rubble-filled cities and we don't have to hunt on garbage dumps to get the food to keep body and soul together.

We can keep it that way, at the price of doing without a few of our luxuries. In the long run, we might even have to add the price of some of the things we have considered necessities. It would be a price worth paying. The dollars will have to continue to build the seawalls in Greece and Europe and in other places. But here at home, they should be going into the building of another wall, equally vital—a wall of wings.

To put it plainly, we're still not doing the job we should be doing in reclaiming our strength in the air—the most urgent strength of all. We were possessed of the first Air Force in the world. We threw it away like a drunken sailor on leave. Now we are trying to put it together again with baling wire and tape, by bits and pieces. The most frightening symptoms of all is the fact that our airmen talk about the urgency of building back, but they have been so cowed by an economy-mad Congress that they deny their own statements when anyone asks what they need to do the job fast and surely. The official answer is that "Congress was good to us—it gave us all we asked."

Maybe, we'd better hold a national seance and recall Billy Mitchell to speak for us! Here are a few bits and pieces which show the back of the picture. They can be duplicated all over the country.

White Sands Proving Ground lies in a carefully guarded area in the New Mexico desert. The work being done is so far forward on the frontiers of science that there is only one officer in the U.S. Army who

really knows even a little bit about rocketry. A tiny core of civilian scientists are helping—so few that they are all working overtime in the race for knowledge.

These men admit that Congress, which has given them the top priority over all other military projects, "forgot" to pass the Military Construction Act, which would have freed them to plan their projects in advance, without being tied to the cumbersome and defeating system of spending the funds allotted them within the limits of a single fiscal year. If they were given the kind of money that was given the atomic scientists during the war, they could achieve their goal in from 30 to 50 per cent of the time which the present limited appropriation allows. Such work is fantastically expensive, but it is still cheaper than blood.

The other bit from New Mexico is to be found in the more typical case of the little town of Deming. During the war, it had a big Air Base, which cost the taxpayers \$4,500,000 and which operated first as a bombardiers' school and later as a tow-target center for anti-aircraft. The airport, which was leased from the town, has been returned to it, complete with two 8,100-foot and four 7,500-foot runways, control tower, eight big hangars, warehouses, barracks for 5,000 men and full equipment. Deming's population is now near 6,000. The Base has been turned back to the city with its equipment, the only proviso being that the Air Forces may use it again in case of emergency. The city fathers estimate that they can wait five years before they will have to do any serious maintenance on the runways. Five hangars have been taken over and they and the warehouses are being leased for industrial purposes. One small flying school, with seven planes, is operating and a few other private planes are kept there. The city runs the gas and oil business and handles transients, and although it is hopeful that the industrial leases will ultimately cover costs, the budget is still in the red.

Against this situation, the CAB has turned down applications for feeder line service in the area, from which Deming would benefit, on the basis of scanty population. Yet New Mexico has a real problem of development because of distances which air transportation would meet. CAB has finally granted a rehearing. In view of the State's protest, there is hope that the decision may be changed.

If this were an isolated instance, it would not be important, but it is of such things that an America strong in the air is compounded. The CAB, for example, can afford to put its natural and well-meant determination to protect the public purse on the shelf for the time being, and remember that Congress also gave it the injunction "to encourage the development of civil aviation."

Congress has a responsibility to act before it is too late. Give us wings for the American Eagle, so strong and so swift that no dictator will dare to "fly" against them!

—J. FRED HENRY

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Where to Fly

FLORIDA

Now that winter winds are beginning to whip, many a vacationing pilot scans the skies in a southerly direction. Many pilots, too, are planning to attend the annual All-American Air Races held at Miami, Florida. For those southward-winging pilots and plane-owners, here's the latest available data we have on airports in that section.

Personal Pilot Information:—

Jacksonville Municipal—Jacksonville. (Cl. 6) El. 24 feet. Bituminous runways N/S, NE/SW, NW/SE, E/W. Traffic controlled by tower. Lighted tetrahedron. Range, runway, flood and obstruction lights. Tie-down fee \$1. 80, 91 100 Octane fuel, major repairs. Meals available at field. Taxi or airport limousine to city 6 miles N. (Jacksonville Chart)

St. Augustine Airport—St. Augustine. (Cl. 3) El. 10 feet. Paved runways, NNE/SSW, ENE/WSW, NNW/SSE, NW/SE. Rotating beacon, Boundary, range and obstruction lights. Lighted wind cone and tetrahedron. Tie-down fee \$1. 80, 90 Octane fuel, repairs, hangar. Radio not required. Taxi or bus to city 4 miles N. (Orlando Chart)

Daytona Beach Airport—Daytona Beach. (Cl. 3). El. 30 feet. Bituminous runways, NE/SW, E/W, NW/SE. Rotating beacon, Flood and obstruction lights. Lighted tetrahedron. Hangar, control tower, 87, 91 Octane fuel. Bus or taxi to town 2 miles Sw. (Orlando Chart)

Orlando Municipal—Orlando. (Cl. 5). El. 106 feet. Paved runways, N/S, E/W, NW/SE, NE/SW. Rotating beacon. Boundary, range, contact, runway, flood and obstruction lights. Tetrahedron near runway intersection. Landing lights turned on by calling tower or circling field. No tie-down fee. Major repairs, 80, 91 Octane fuel. Meals at airport. Bus or taxi to town 2 miles E. All sports facilities nearby. (Orlando Chart)

Fort Pierce Airport—Fort Pierce. (Cl. 2) El. 18 feet. Sod strips, N/S, E/W, NE/SW. Boundary, range and obstruction lights. Circle on field. Wind cone. Hangars, major repairs, 80 Octane fuel. Taxi to town 3 miles SSE. (Miami Chart)

Witham Airport—Stuart. (Cl. 4) El. 14 feet. Asphalt runways, NNE/SSW, NE/SW, NW/SE, NNW/SSE. Rotating beacon. Boundary and obstruction lights. Wind sleeve and traffic T. Landing lights on request. No tie-down fee. Hangars, major repair, 80, 91 Octane fuel. All accommodations in Stuart, plus wide variety of sports activities. Taxi to town 1 mile SE. (Miami Chart)

Forman Airport—Ft. Lauderdale (Cl. 4). El. 5 feet. Asphalt runways, N/S, E/W, NW/SE, NE/SW. Rotating beacon. Course, flood and obstruction lights. Wind sleeves. Tie-down fee 50¢. Minor repairs, hangars. Some food at airport. Full facilities in town. Bus or taxi to town 3 miles SSW. Popular with winter vacationists. (Miami Chart)

Chapman Field—Miami. (Cl. 3). El. 3 feet. Allway sand and sod field, 2 runways, E/W, N/S. Wind cone and T. Overnight tie-down. Major repairs, 80 Octane fuel. Taxi or bus to town 10 miles SSW, to Coral Gables 10 miles. Full facilities in either place.

Miami Aviation Center—Miami. (Cl. 2). El. 8 feet. Limerock runways, N/S, E/W. Tetrahedron. Wind cone. Overnight tie-down \$1. Minor repairs, 80 Octane fuel. Meals and tourist cabins at field. Taxi or bus every hour to Miami. (Miami Chart)

Florida—West Coast

Stengel Field—Gainesville. (Cl. 3). El. 70 feet. Sod runways, E/W, N/S, NW/SE. Boundary day markers. Wind cone and T. Landing lights available by circling field. (Continued on page 55)

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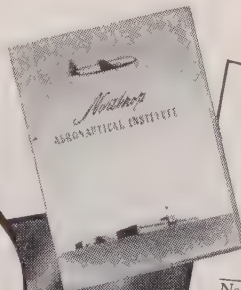
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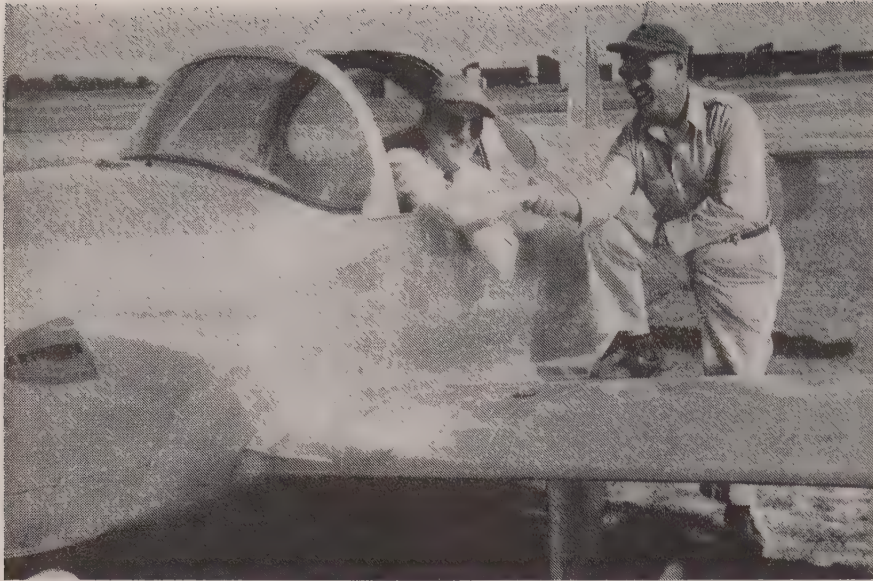
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APPROVED FOR VETERANS



FARM EDITOR Merv Clough, of Wisconsin Agriculturist & Farmer, accepts congratulations from Instructor E. A. Chimilewski after getting a pilot's license in six days

HANGAR FLYING

Flying Editor

OUT WISCONSIN WAY, flying farmers heckled farm paper editor Merv Clough so much Editor Clough had to learn to fly. The fact that Mister Clough helped organize the Wisconsin Flying Farmers and is now their Secretary may have had something to do with it, too. At any rate Merv Clough, Associate Editor of the Wisconsin Agriculturist and Farmer, took his first lesson bright and early one Monday morn, had his license by the following Saturday, and promptly took off on a trip in an *Ercoupe* the next day. Congratulations to Clough and to the Wisconsin Flying Farmers, too.

Helicopter Rights

THE LANDGRAF HELICOPTER Company of Los Angeles, California, recently announced it had sold foreign manufacturing and sales rights to the Firth Helicopter, Ltd., London, England. One of the Landgraf 'copters is their Model H-2, a single-seater experimental machine with a gross weight of 850 pounds. It is powered by 85-hp Pobjoy radial engine which drives two 16-foot diameter three-bladed rotors displaced laterally on booms. The H-2 (see photo) boasts such design features as cyclically controlled ailerons on tips of rotor blades, automatic collective pitch control, tricycle landing gear that is retractable, etc.

Minnesota Aeronautics

THE MINNESOTA DEPARTMENT OF AERONAUTICS became proud owners of first airplanes to be owned and operated by the state. Two planes recently were delivered to department officials at Holman Field. One is a four-passenger Fairchild F-24, and the other is a two-place Luscombe *Silvaire*. The ships will be used for inspection work on 105 publicly licensed Minnesota airports and 115 privately licensed fields. In addition they will be used to transport inspectors visiting the state's 106 licensed flight schools.

Flyer Finder

A BILLINGS, MONTANA job-seeker, Everett Hudgins by name, has found a new way to get what he wants. He locates his jobs by plane, lands and makes his application . . . and usually gets the job. The kind of a job Hudgins wants may have something to do with it. Everett is a construction worker and particularly likes working on roads. So when one job is finished, he takes off in his T-craft and looks around for another road-building gang at work. Once spotted, it's usually simple for Hudgins to land his plane near the workers, find the boss . . . and then get the job. Because of his plane, Hudgins can look and find work anywhere within a radius of several hundred miles from his hometown of Deaver, Wyoming. (B. Wilson, New York.)

Airliner Delivery

AMERICAN AIRLINES has announced it has received delivery on 29 of the 50 four-engine DC-6's it has ordered. Delivery of

the remaining 21 are expected before the end of the year. The total Flagship fleets now is 141 planes . . . 29 DC-6's, 39 50-passenger DC-4's, six DC-4 Airfreighters, 62 21-passenger DC-3's and five DC-3 Airfreighters. American Airlines also has 100 300-mph Convairs on order.

New Field

ANOTHER AIRFIELD has been added to the sectionals . . . this one is Grossinger Airport at Ferndale, N. Y. Operated by Liberty Flying Service, the Grossinger Airport is maintained on a 24-hour basis, and is equipped to handle everything from a *Cub* to a DC-3. The field is located 87 miles northwest of New York's LaGuardia Field, has two turf runways N/S 4,000 feet and E/W 1,800 feet. It is 1,590 feet above sea level. Socony oil and 80 and 91 octane gasoline are stocked. There is no landing fee. The plum of the set-up is that the field is surrounded by good hunting, fishing, golf, etc., and there's an excellent inn within easy distance of the airfield. Winter sports activities, too, are on the docket for visitors to Grossinger during the winter months.

Toot Tooter

IOWAN BILL SHIELDS, Council Bluffs' flying school operator, was startled to hear the blast of a more-than-loud automobile horn coming from a transient Cessna taxiing up to the gas pump. Curiosity stricken, Shield walked up to the plane and asked the pilot, "Why the horn?"

"I'm a farmer out in western Nebraska," the pilot replied, "and it seems like every time I want to land, my strip is covered with cattle. They won't move if I simply buzz them, but if I turn on this horn and buzz them, they scatter quick and I can land!" (Phil Pryor, Council Bluffs, Iowa)

American Airwomen

WOMEN INTERESTED IN AVIATION will welcome news of the American Airwomen, Inc., an organization formed in San Francisco last year. A new chapter has been added (Napa, California) and plans are going forward for creation of American Airwomen chapters throughout the state of California. Gilroy may be the next chapter. Once a month this group participates in a cross-country flight for either breakfast, lunch or dinner.

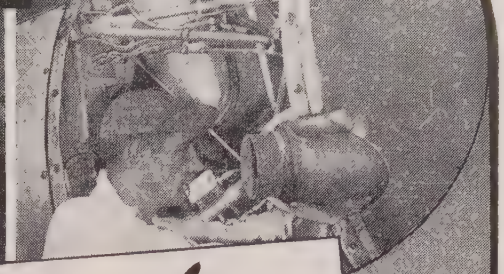
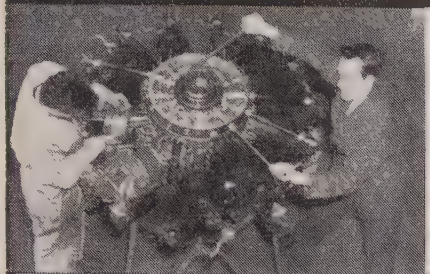
(Continued on page 50)

LANDGRAF H-2, a single-seater experimental helicopter, is powered by 85-hp Pobjoy



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PITTSBURGH INSTITUTE OF AERONAUTICS has been in successful operation since 1929, graduating thousands of students into aviation jobs all over the country. PIA works in cooperation with executives of all the Aviation industries and has an excellent employment record. The demand for PIA trained men still so far exceeds the supply that conscientious students should find no difficulty in getting jobs in aviation.

The PITTSBURGH INSTITUTE OF AERONAUTICS is one of the largest aviation training schools of its kind in the United States. The principal place of business is the AVIATION BUILDING at 100 Seventh Street, Pittsburgh, Pennsylvania, where are housed the shops and academic classrooms. In addition to the Aviation Building in downtown Pittsburgh, the advanced phase of training is given at a newly opened and modern building at Allegheny County Municipal Airport where the trainee completes his last phase of training in both Aircraft and Aircraft

Engines on live work projects. Numerous advantages accrue from this location as the Allegheny County Airport is a large Airline Terminal and center of aviation activity. PIA owns two buses and transports the students, free of charge, to and from the airport daily. Another excellent feature of PIA's training program is that all examinations incident to the A & E licenses are conducted at the school. The Civil Aeronautics Administration has assigned a Designated Aircraft and Engine Mechanics examiner to the school and we also have three Designated Maintenance Inspectors on our staff. PIA is justly proud of being among the leaders in the United States in setting up this type of testing program.

PITTSBURGH INSTITUTE OF AERONAUTICS in being non-profit and tax exempt was able to share in the distribution of aeronautical training materials at nominal costs, which were allocated by the War Assets Administration. It has already received, in gross amount, some two-and-a-half million dollars worth of aeronautical training materials and points with pride to being one of the best equipped schools

for aviation training in the United States. Types of engines range from 40 H.P. to 3000 H.P. for the smallest of light planes to those that power the B-29 and the heaviest aircraft of today. The school owns a fully equipped B-24 Liberator, two N2S-3 (Boeing Koydets), and two AT-6A (North American Advanced Trainers), Link Trainer, Automatic Pilot, and other components to be used for training.

GOVERNMENT APPROVED. In addition to being approved as an Aviation Mechanics School by the United States Civil Aeronautics Administration and licensed by the Department of Public Instruction, Commonwealth of Pennsylvania, for Veterans Training, PIA keeps under repair approximately 20 live aircraft of various types. These airplanes are overhauled, licensed and returned to service. Engines are measured and magna-fluxed. Hence the students have an opportunity of working on live aircraft under supervision of instructors.



T. B. LYONS, President
B.S., M.A., Ph.D.

Dr. T. B. Lyons, as President and Treasurer of the school, has had wide experience, not only in school administration but also in aviation. He was for many years connected with the Pittsburgh Board of Education in the capacity of teacher and administrator. During the war, he was General Manager of the Graham Aviation Company which operated a Primary Training School for the United States Army Air Forces at Southern Field, Americus, Georgia. Dr. Lyons is a graduate of Lock Haven State Teachers College and the University of Pittsburgh and holds the following degrees: Bachelor of Science, Master of Arts, and

Doctor of Philosophy. He has also taken graduate work at Penn State College, Bucknell University, New York University, Springfield College, and Washington and Lee University. Dr. Lyons assumed his duties at PITTSBURGH INSTITUTE OF AERONAUTICS on December 1, 1944. He is a member of the Advisory Committee on Private Trade School Registration for the State of Pennsylvania, Director of Pittsburgh District Aviation Commission, Chairman of the Board of Directors of the Pennsylvania Association of Private Vocational Schools, member of Phi Delta Kappa, and is listed in WHO'S WHO in American Education.

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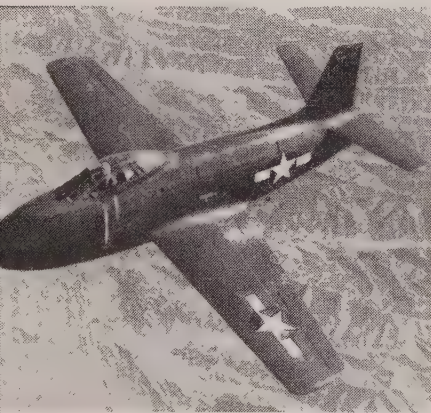
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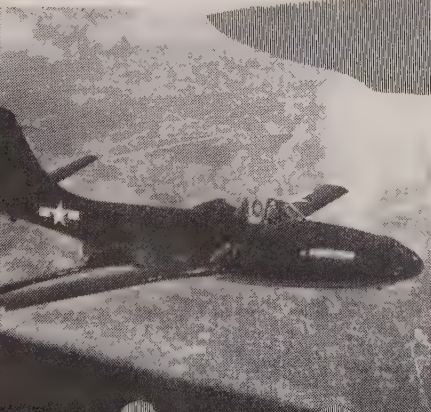
RYAN FR-1 (above) and XF2R1 (below), first Navy prop-jets, have speeds "over 500-mph," with F2R faster



NAA'S FJ-1, all-jet fighter, was designed for carrier use



TWIN-JET McDonnell XFD-1 (below) passed carrier test

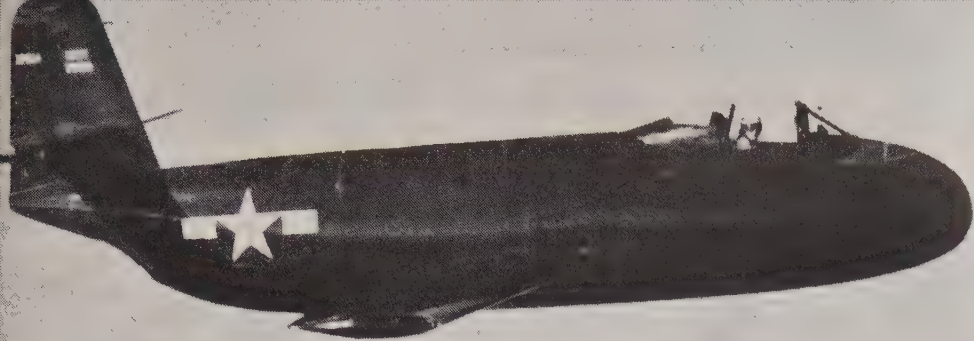


JET for the Fleet

THE appearance within the past several months of more than half a dozen Navy jet-powered planes indicates a technical revolution has been going on during the past few years; these things do not happen overnight. As a matter of fact, no new Naval plane designs have been laid down since the end of the war which do no call for jet or rocket engines.

Jet propulsion via aircraft gas turbine was demonstrated six years ago (May 15, 1941) when the late "Jerry" Sayer flew the Gloster E 28 *Pioneer*, powered by the Whittle-designed W 1 turbojet, off the RAF field at Cranwell. That sparked a line of development which in England led to the Rolls-Royce *Derwent* and *Nene*, de Havilland *Goblin* and turbojets, the *Meteor*, *Vampire* and newer fighters, and in the United States to the design and production of the I-40 jet engine by General Electric and Allison, and the success of the Lockheed P-80. All this may be described as the Whittle line.



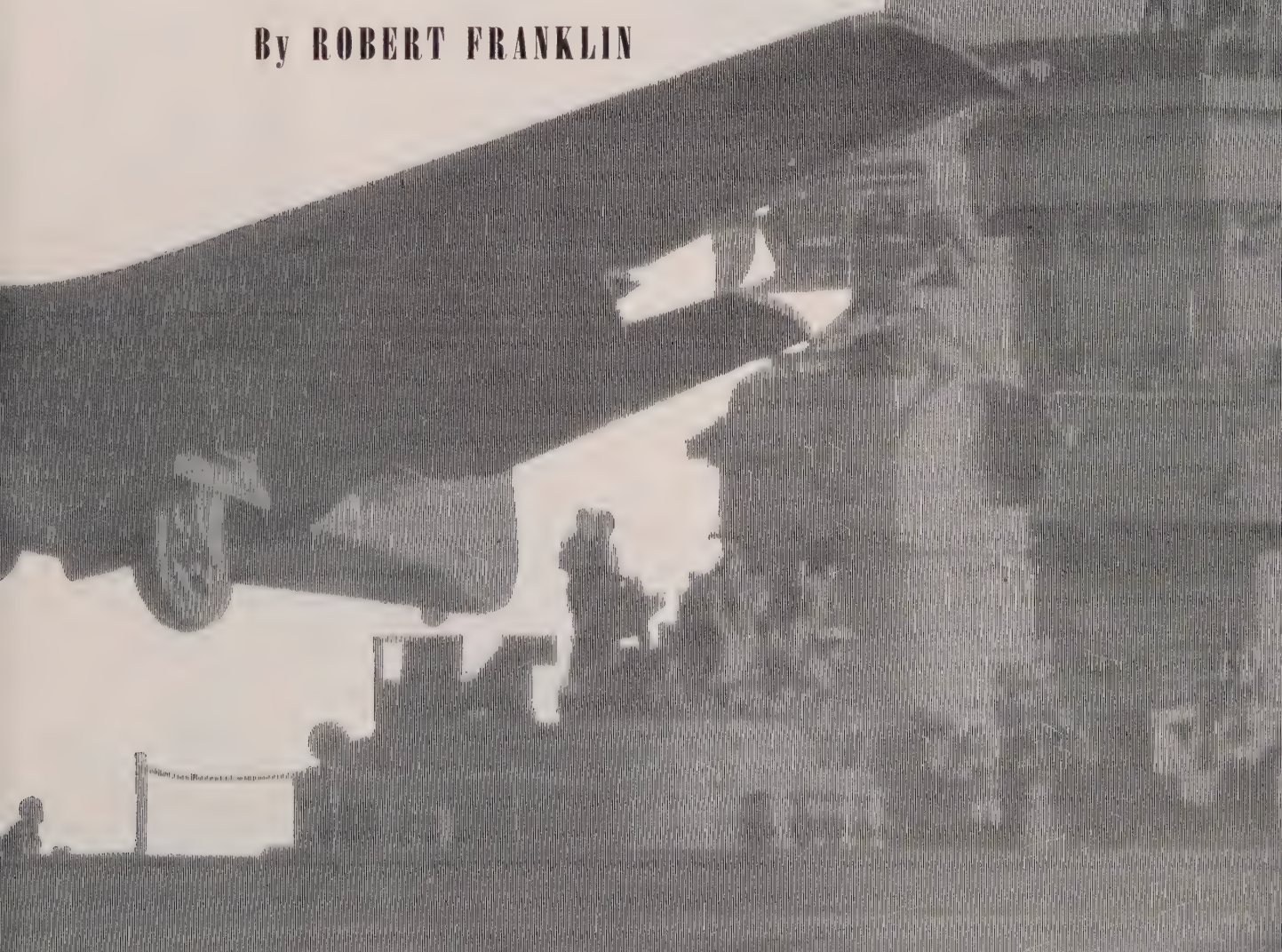


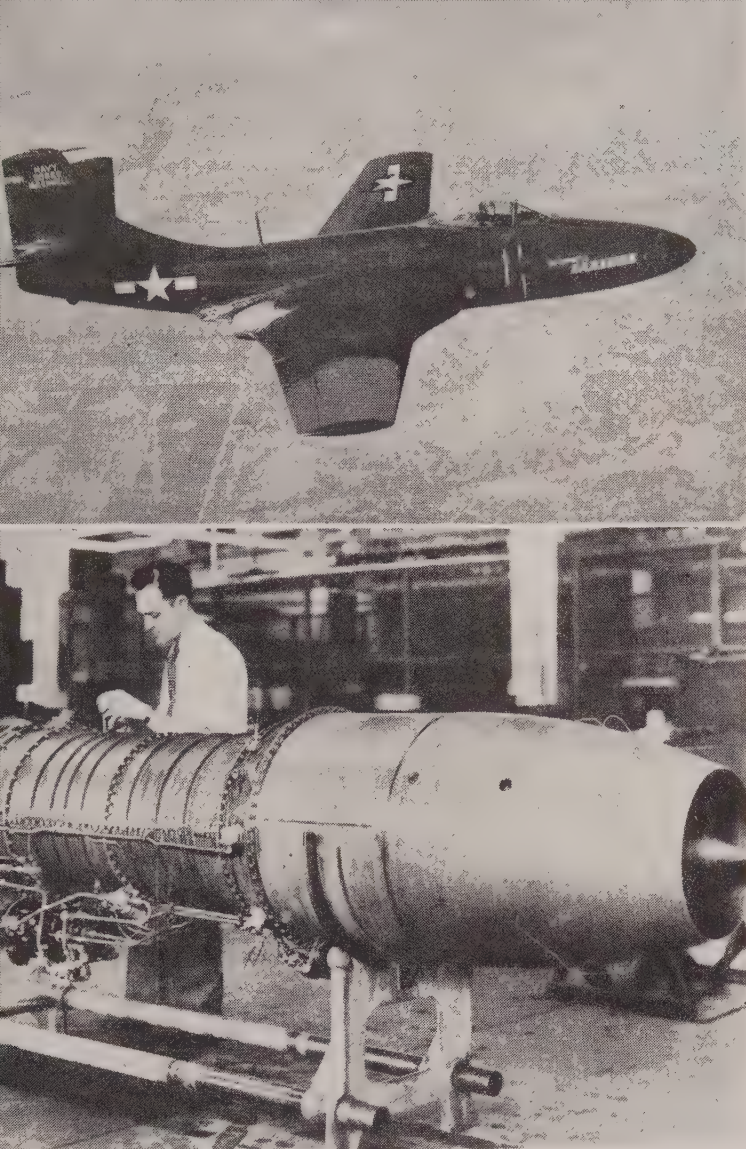
CHANCE VOUGHT XF6U-1 *Pirate* is one of fastest jet fighters for carrier use

However, some two or three years earlier than that epoch-making date, the U. S. Navy, which seldom misses any bets when it comes to scientific and technical research and development, was taking an active interest in the possible use of jet for aircraft. In the late fall of 1939 the Navy asked the National Academy of Science to prepare a special report on the subject. This report was submitted to the Navy's Bureau of Aeronautics in June 1940. At the same time Dr. Stewart Way, an engineer of Westinghouse Electric Corp., was making design studies on jet, including turbojet and the athodyd, or ramjet. These studies were completed in the summer of 1941 and became the foundation of the important aircraft gas turbine activity now being carried out by Westinghouse, largely under Navy sponsorship.

Actually the conclusions reported by the National Academy of Science were not too optimistic, and were only a few steps farther along than the

By ROBERT FRANKLIN





McDONNELL XF2D-1, Banshee, is more powerful version of Phantom and is powered by two Westinghouse turbojet units. Navy's composite-powered bomber, Martin XP4M-1, has two Wasp's, two Allison J-40 jets

Buckingham report published by the National Advisory Committee for Aeronautics. There appeared to be too many side developments to be licked before jet propulsion would really work. Metals had to be able to stand higher temperatures, we had to know more about fuels and combustion, and airplanes had to be designed to go a lot faster because jets were only efficient at high speeds.

Came December 1940, however. Early in that month the Chance Vought XF4U-1 (later to become the famous *Corsair* carrier and land-based fighter) was test flown with the first of the Pratt & Whitney R-2800 engines to be rated at 2,000 hp, instead of the initially rated 1,850 hp. The NACA officially clocked the flight as 402 mph, and BuAer's Admiral Jack Towers exuberantly proclaimed it as the world's fastest experimental fighter and the first to exceed an honest 400 mph. He was 100 per cent right on both counts, although Britain's *Spitfire* with the improved Merlin engine and AAF's P-38 with full-rated Allison's were to follow shortly after. With 400 mph in the bag and propeller efficiency falling off sharply above 450 mph, the prop-less turbojet looked good for another very serious try, and along with it the mechanically simple, lightweight propeller-driving gas turbine, for specialized uses in which the "pure" turbojet was not considered suitable.

NACA's Gas Turbine Committee was formed in the spring of 1941, with projects by General Electric and Westinghouse under way within a few months. Then Pearl Harbor provided the crisis which actually got Westinghouse started on the first American axial-flow turbojet engine. They were told to follow an independent line and "not get involved with what anyone (Continued on page 42)



AIR RACE WINNERS



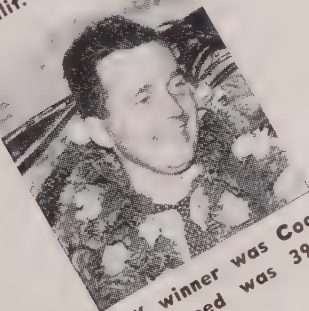
TINNERMAN winner. Ken Knight flew P-63 at speed of 352.1 mph; won \$2,500



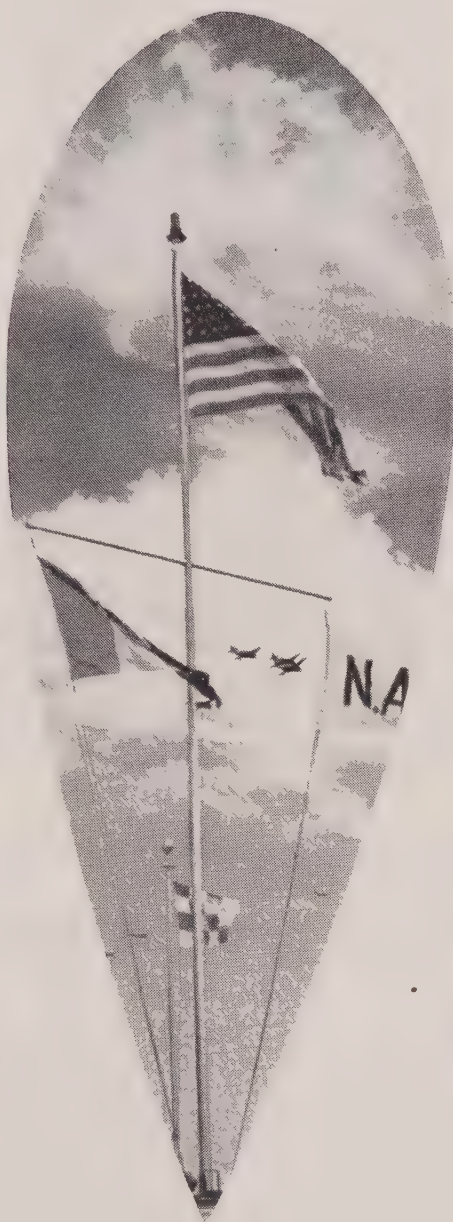
HALLE WINNER Ruth Johnson flew AT-6 at speed of 223.2 mph; won \$2,500



BENDIX WINNER Paul Mantz flew P-51 Calif. to Cleveland in 4 hours 36 minutes



THOMPSON TROPHY winner was Cook Cleland in Corsair. Speed was 396.1



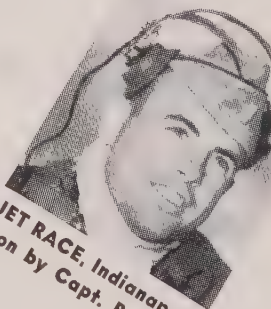
SOHIO RACE winner was famed Tony Le Vier. He flew a P-38 at speed of 360.8 mph for a purse of \$2,500



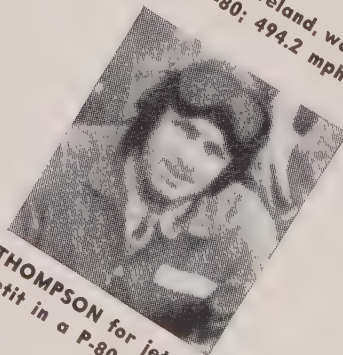
KENDALL RACE winner was Steve Beville in a P-51. His speed was 384.6 mph



GOODYEAR MIDGET race winner was W. Brennd in Whitman. Speed: 165.8 mph



JET RACE, Indianapolis to Cleveland, was won by Capt. Burner in P-80; 494.2 mph



THOMPSON for jets was won by Col. R. Petit in a P-80. His speed was 500 mph

AT FIRST glance, you'd say that to plan a non-stop trip of more than 600 miles in an airplane with a normal cruising range of not much over 400 and with only moderate tail winds to count on, is stretching things just a bit too far.

Yet that is just what Dr. Leonard M. Greene, the man who carries an invisible skyhook wherever he flies, has done on more than one occasion. How he does it offers a valuable tip to cross-country private pilots with a yen for improvement.

Dr. Greene, noted as the designer of the Safe Flight Indicator and other preventatives of broken necks and broken airplanes, is an aerodynamicist who not only is able to interpret the theory of various flight principles, but puts them to work in actual practice. One of his pet systems calls for stretching the range of any given unsupercharged airplane far past the point envisioned by the manufacturer.

Altitude, and lots of it, is the secret. Every plane has an optimum cruising altitude up where the air is thin, where low-altitude cruising performance can be matched, but with the expenditure of far less

Built-In Skyhook

By **JEFF LYON**

power. The trick is first to find the optimum altitude, then to be able to calculate the aircraft's maximum range accurately enough to avoid the risk of running out of gas. Once these two items are checked off, you can sit back and laugh at the ship's placarded range as the miles roll by far below your wings.

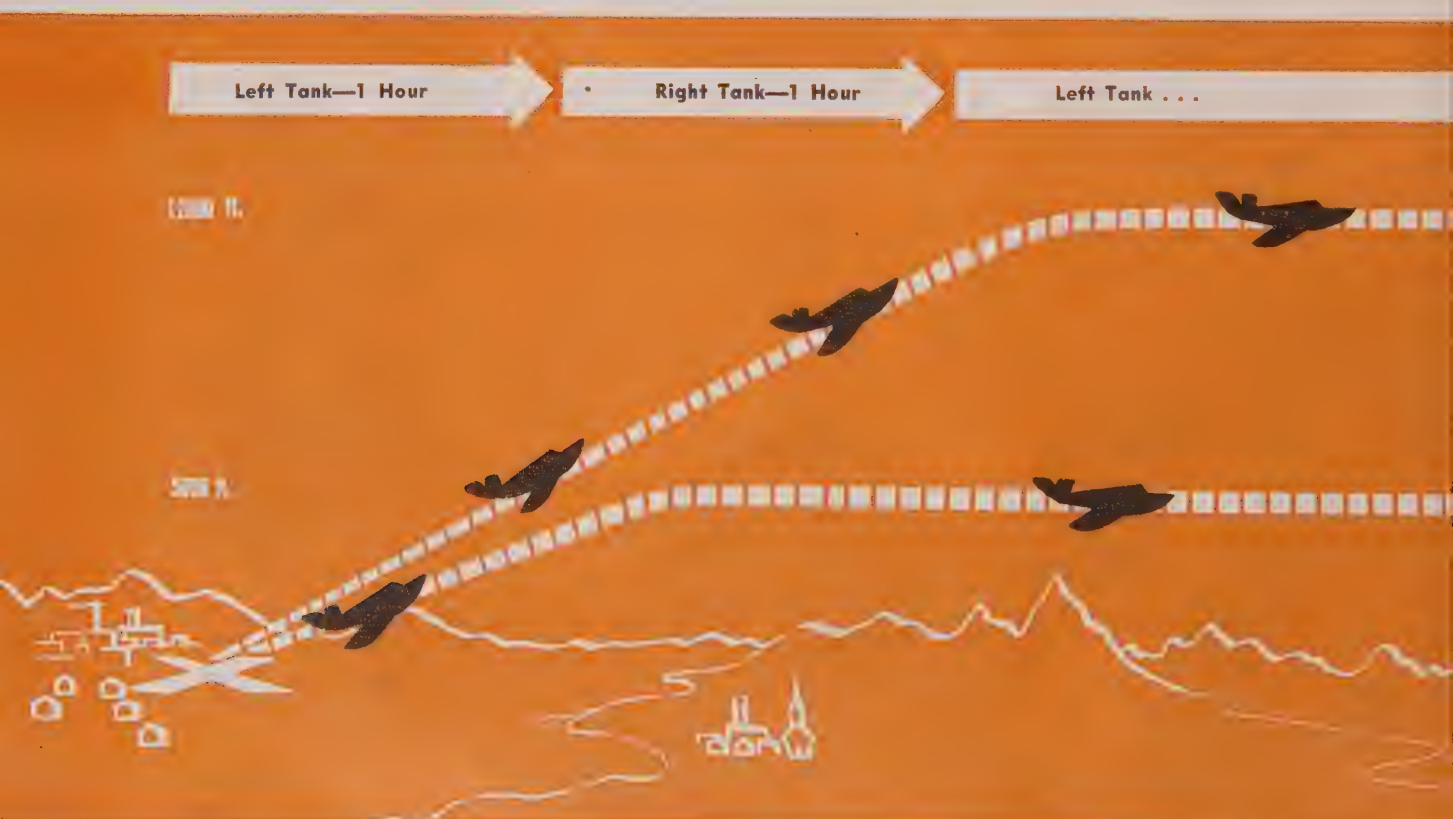
The story of Dr. Greene's trip from Charlotte, N.C., to New York's LaGuardia Field last fall rolls the theory up in a nutshell. Here are the

basic ingredients as Dr. Greene offered them:

Dr. Greene's veteran Fairchild 24 (he put over 1700 hours on the ship before swapping it in on a new *Bonanza* recently) was supposed to burn 10 gallons of gasoline per hour at sea level cruise, around 115 mph. With its 165-horsepower *Ranger* engine drawing from two 20-gallon tanks, the ship supposedly was good for three and one-half hours at cruising power, plus a half-hour reserve . . . a total range of 440 miles at the very outside.

Since the distance between Charlotte and New York, as plotted by Dr. Greene, was approximately 602 miles, it would seem that at least one stop for

BEST ALTITUDE was 12,000 feet. There, 45 per cent power gave the same cruising as 75 per cent power at sea level

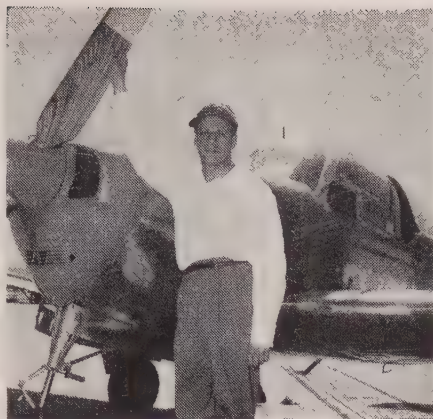


refueling would be necessary.

However, Dr. Greene calculated that whereas it would be necessary to put out about 75 per cent of the engine's power to maintain maximum cruising speed at sea level, only about 45 per cent would get the same performance at high altitude. Thus, while the Fairchild would burn less gas and deliver only about 75 horsepower, it would buzz along just as fast at it would at three-quarter power "downstairs."

All this was fine, in theory. But although sitting on the ground at Charlotte he was able to calculate he'd make New York with something to spare, he knew he'd have to devise a foolproof method of judging his fuel supply in flight, to avoid some anxious moments at the tail end of the trip.

Accordingly, he worked out a system of in-flight fuel calculations that is simplicity itself, and extremely dependable as well. He took off on his left tank, climbed to his optimum cruising altitude around 12,000 feet and, after *exactly* one hour from take-off time, he switched to the right tank. Then, he flew exactly one hour on the right tank



X-C TIP is offered by Dr. L. M. Greene

and switched back to the left. He flew on the left tank until it registered empty—which was three and three-quarters hours after take-off.

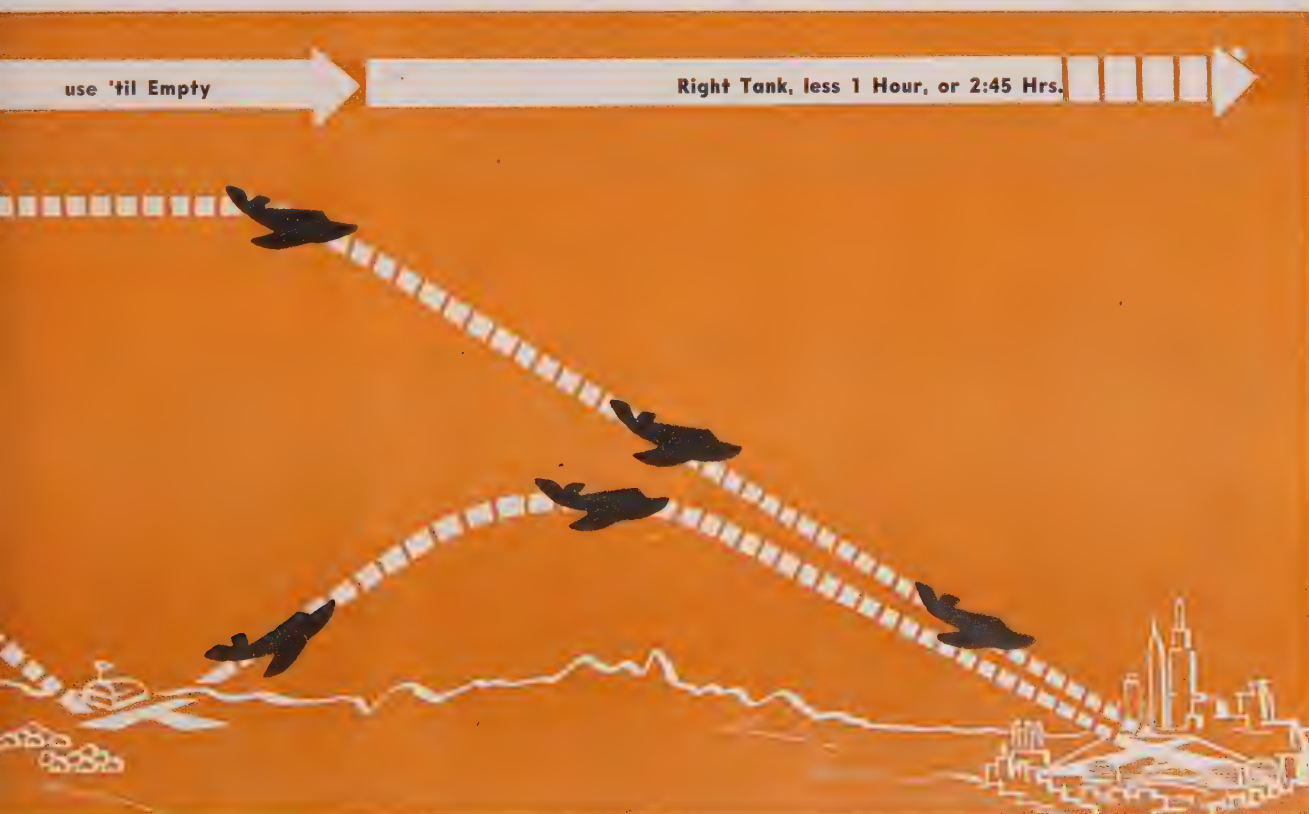
Subtracting the one hour in which he'd flown on the right tank, Dr. Greene had gotten a net of two and three-quarters hours' flying out of the left tank. Doubling this, he estimated a total potential range of five and one-half hours—certainly payment aplenty for the patience shown in climbing to 12,000 feet.

By the time he had exhausted his left tank and switched to the right for keeps (and remember, the right tank still had two and three-quarters hours worth of gas in it) he was over Trenton, N.J., and practically "home free!"

The Fairchild touched down at LaGuardia exactly four hours and 20 minutes after the take-off at Charlotte. A careful check of the fuel aboard showed nine gallons left over, indicating a consumption of about 7.1 gals. per hour. This leftover fuel would have flown him for an hour and a third more, or a total range of five hours and 40 minutes.

In his in-flight calcula- (Continued on page 44)

AIR TRIP of 602 miles was flown non-stop in ship that, according to the builder, had a range of only 440 miles



FOR WINTER STORAGE

By JERRY LEICHTER

THE spark plugs were frozen in and the cylinders were spotted with ugly areas of rust and peeling paint. The top canopy had a big section cracked out and the cabin upholstery was badly stained. Practically every steel bolt, cable and part on the airplane was rusted to some extent.

Sounds like a description of a junk-shop fugitive, doesn't it? Exactly three months before it had

at that airport, including the work the owner could have done himself. This year that same owner is going to have the same plane completely protected since he still hasn't been able to get hangar space, but even if his plane was indoors this smartened-up pilot has found that it still would require some work to keep his plane in good shape over a three-month stretch of cold and wet winter weather.



GOOD PROTECTION for plane tied down for fairly long periods of time is set of vinyl-coated nylon covers like these on Aeronca Champion. Using half-inch hemp rope, plane is tied to sunken pipe. Wheels are chocked

been a half-year-old two-place all-metal job with less than 100 hours. No accidents marred its books. but the end result was still a case of pilot error.

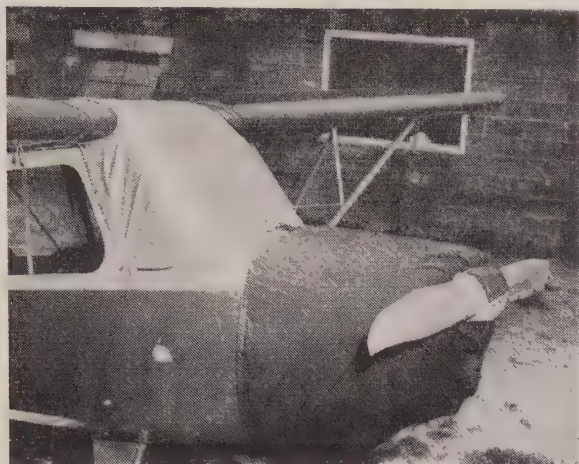
Ignoring advice, the pilot-owner of the plane had tied it down for the winter in an outdoor storage area, locked the canopy, paid his bill and walked away. He said he'd be out to look at it every so often and he didn't see any sense in doing anything about protection against the weather or having a mechanic check it periodically. Now he knows better and he paid for the knowledge the hard way.

The bill for maintenance to make the plane air-worthy again last spring ran to several hundred dollars. The charges for winter proofing and periodic check would have been no more than \$10.00

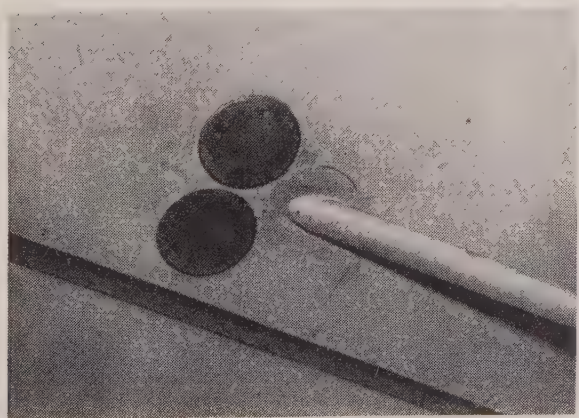
The late fall and winter season, when the least amount of flying is done in most sections of the country, are the most important from the storage viewpoint. The shortage of inexpensive private hangars and other storage space has emphasized what can happen to a plane left out in the open in blustery northern weather. Some owners also have discovered that even a hangar isn't the entire solution when a plane is grounded by weather and flying conditions for three or four months.

The plain truth, ignored by many personal-plane owners, is that even when a plane is protected by four solid walls and a roof, it needs certain basic protective treatment if it is to be put in temporary storage. The big enemy is moisture in the form of

AERONCA close-up shows installation of prop. engine, wind-shield covers, wing covers. Note tape over vent



ENGINE, winterized, has dehydrator plugs installed and engine openings sealed. Prop wears nylon snap-on



WING OPENINGS are sealed with masking tape at strut point. Leave drain holes open at trailing edge



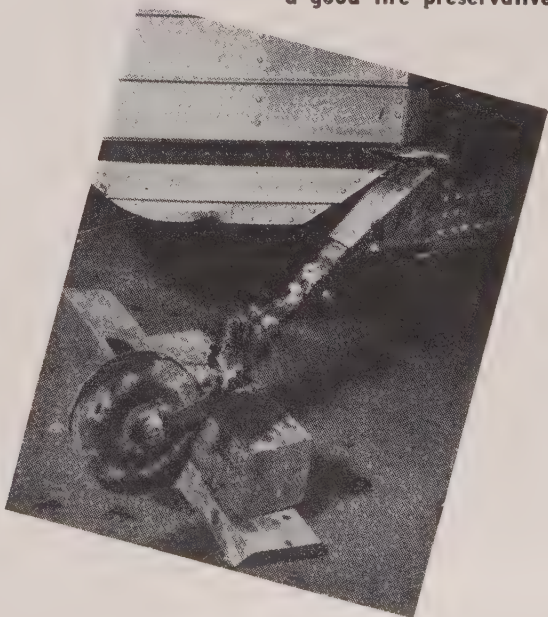
LOCK ship's controls in place by fastening rear stick in place with safety belt from front seat

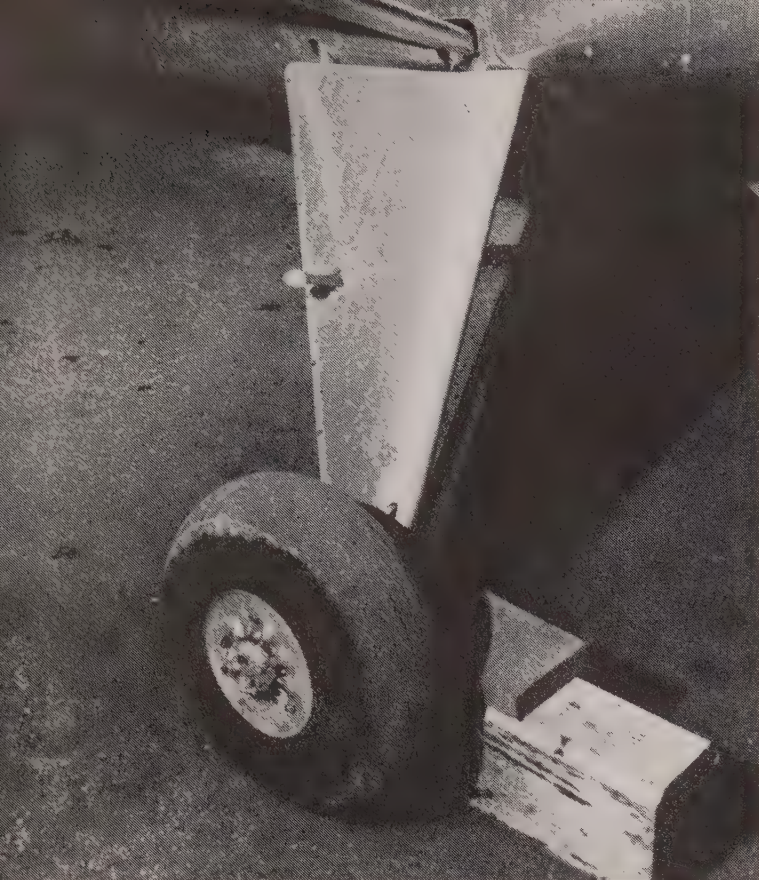
dampness from rain or melting snow, with cold right behind in all its damaging forms—low temperature, frost, snow and ice. All have to be considered whether an airplane is tied down outdoors, in a three-quarter shed or in a closed hangar.

Starting at the outside and working in, while the best primary guard against the impact effects of rain, hail, snow or windblown soil is afforded by a hangar, when space is not available, canvas shelters rigged in various ways or tailored nylon covers may be adequate for outer defenses.

Even under a roof, unless the hangar is fully

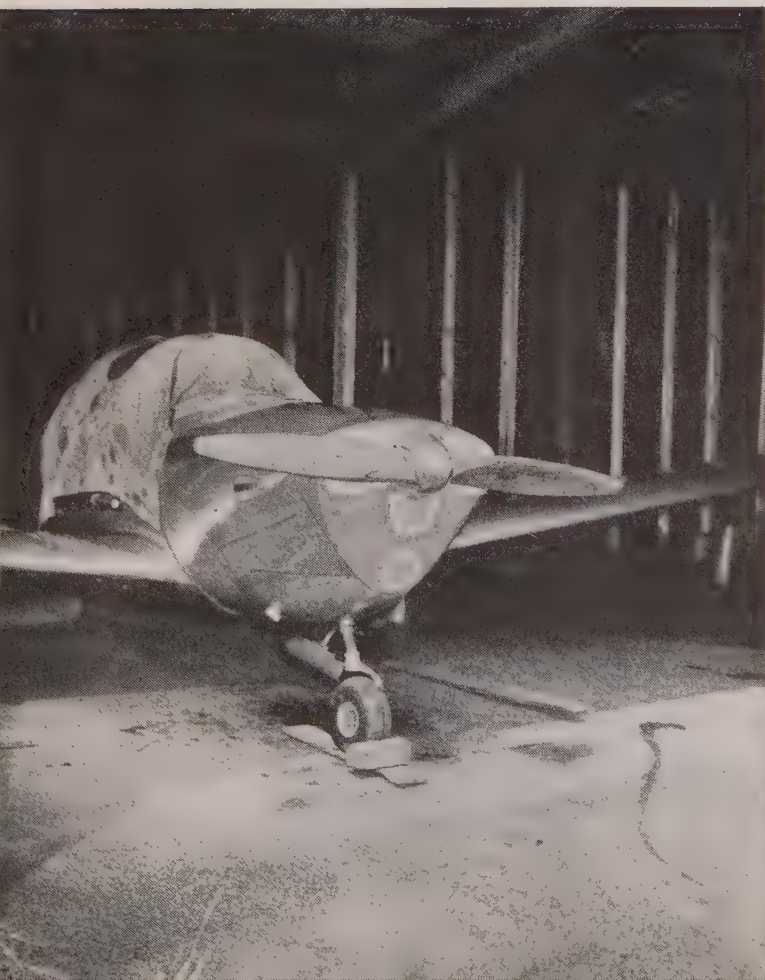
TAIL wheel spring, assembly are coated with vaseline. Tire is painted with a good tire preservative





LANDING GEAR is blocked up, with wheel retaining nut and exposed axle, bolt and nut heads greased

PLANE, though stored in T-hangar, has all vents sealed canopy covered. Engine, too, must be carefully covered



weather-tight, various types of covers will help protect the plane. A typical complete lightplane set for outdoor use, constructed of vinyl-coated nylon fabric, includes covers for the propeller, engine, windshield and canopy, each wing, the top of the fuselage, and the empennage. They may be bought separately. For year-round use the most important are the engine and canopy covers since they can be used indoors to keep hangar dust and other dirt out of the cockpit and engine sections.

Aside from providing top covers, there are specific jobs to be performed on an airplane that is going into temporary fall and winter storage. All these operations fall under the general classification of "inhibitors," preventing or retarding the damaging chemical or physical action of the elements. As a standard minimum, planes that will be inactive or




AILERON cables are well coated with vaseline to keep from rusting. Grease-cover nuts, bolts, worm gears, etc.

not run up for 30 or more days require some or all of these measures of protection, depending usually on the amount of dampness or cold expected.

The first job, either indoors or out, is to raise the wheels off the ground by means of wood blocks under the axles. Where the storage period is short, boards may be placed under the tires, especially where the surface is turf or bare earth, to guard against ground freeze or frost. Wheels so raised cannot become gummed or sink in mud and subsequently freeze in during cold spells. For particular owners, a coat of good tire or rubber preservative paint, renewed at intervals, will prevent weather-checking and prolong tire life.

Whether or not a propeller is used, all propellers should be given a coat—(Continued on page 46)

HAT



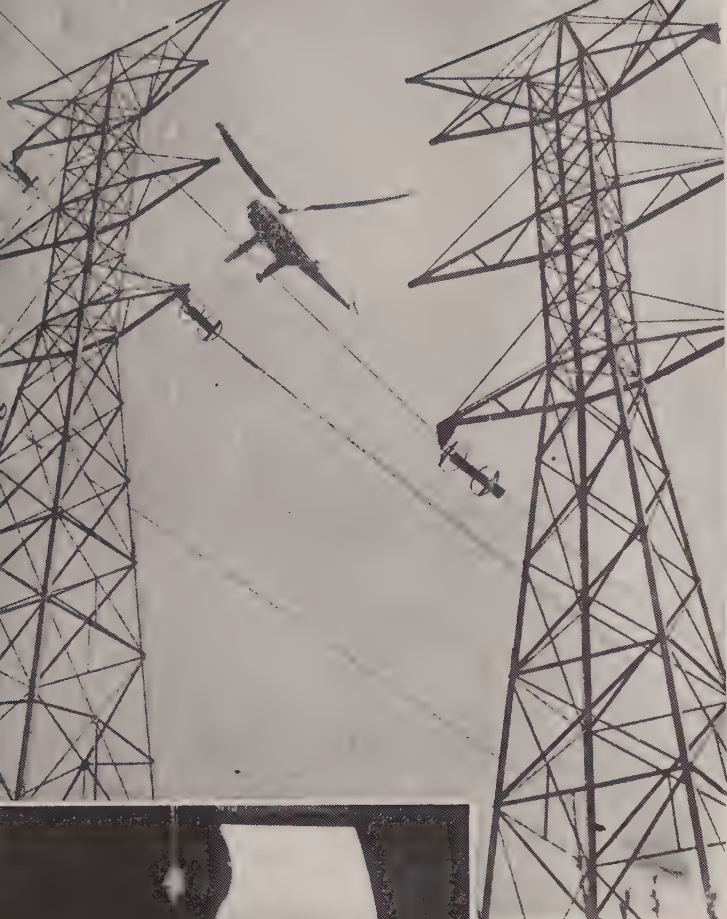
Helicopter Air Transport sparks the future of the helicopter by using it to do great variety of jobs . . . better

ONE of the first helicopter air lines in the world is HAT . . . or Helicopter Air Transport, to put it the long way. Founded in 1945 by far-sighted Norman Edgar, HAT is busy every day proving the worth of the helicopter and Norman Edgar's faith in it—both for today and the future.

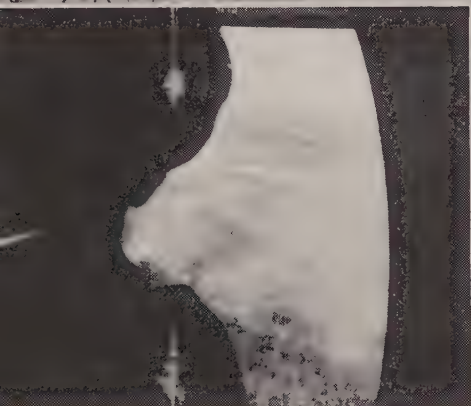
Today HAT has eight helicopters, Sikorsky's and Bell's, beating their way all over the country in a variety of commercial assignments. More helicopters are on order, and as soon as they are delivered they will take their place on the commercial assign-

FORECAST for a great future, HAT's helicopters (Bell's and Sikorsky's) every day are adding new accomplishments to an already long list of jobs done better by the 'copter than by any other means of transportation





UTILITY companies look to the helicopter as better means of surveying power lines (left), while State Health Departments give the 'copter the nod when it comes to pest control. 'Copters are used for DDT-ing



FOREST-FIRE spotting is another 'copter job. HAT recently signed contract with N.J. Conservation Dept.

PUBLIC HEALTH officials called upon helicopter this summer to take one of their inspectors to remote reservoirs to test purity of water. (left). Another time one of HAT's 'copters was used for sheep counting



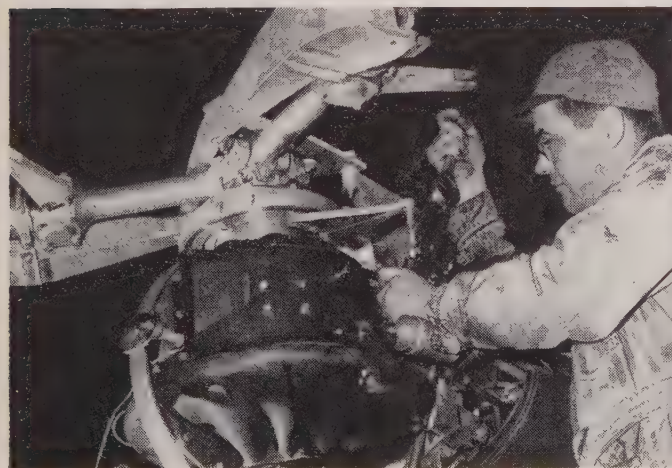


PARALLEL to early barnstorming days, selling helicopter rides is good way of acquainting people with value of the helicopter (above). Once a person rides a 'copper, he is sold on it and will use it for aerial commuting

ment line at HAT's field in Camden, N. J. Despite the present-day high cost of operation, HAT's helicopters are blazing new sky trails, doing jobs that couldn't be done by conventional aircraft, and doing them better than by any other transport means.

One of the primary uses of the helicopter is as an aerial taxi. Many times HAT has been called upon to pick up a client practically at his front door and fly him to some metropolitan airport to make connections with a transcontinental airliner. Other jobs have included emergency delivery, forest-fire spotting, DDT-spraying, etc. In addition, HAT operates a helicopter school. Men who finish HAT's course of instruction are men ready to get in on the ground floor of a great new field of air transport. ✈

TRAINING also is important part of HAT's business. Mechanics are taught rudiments of the helicopter, and pilots are trained to fly them. Thus far only licensed pilots and A & E mechanics are accepted for training



Flight Instruction Business



INSTRUCTION today is a business run by practical men. Unbusiness-like and slipshod methods invite failure

By C. B. COLBY



SUCCESSFUL OPERATOR is man who is constantly alert to needs of businessman pilot

BACK a few years ago, in the days when a student's flight instruction rates were set by the kind of a car he drove or the cut of his clothes, the "fixed base operator" was anything *but*. His equipment usually consisted of one, perhaps two "flying machines," a natty flying jacket, some chenille trimmed "Resistal" goggles and perhaps a once-white silk scarf and riding boots.

There was little responsibility on either side. The "operator" charged all the traffic would bear, kept the student a "student" as long as possible and gave him as little consideration as mere civilization would demand. The student took all manner of insults

and intimidation, and never questioned the mode of instruction, the condition of the aircraft or the allotment of air time to his "training."

But all that was yesterday—when flight instruction was a racket. Today it's a business—*big* business—run by practical men in a practical way. As a big business it has set up certain restrictions, certain practices and ethics that it *must* maintain to be not only *a* business but *in* business. Today, too, the student has some obligations upon *his* part to the operator. It's not a one-way affair—it's a mutual "fair practices" operation.

Let's take the modern version of the fixed-base operator and see what "fixed" him. An organization such as the Brayton Flying Service, Inc., out in St. Louis, Mo., for example, is typical of hundreds of such businessmen-in-aviation. They keep 18 planes in daily operation round the flying-time o'clock. Such organizations are definitely "going" concerns with an important place in the life of their communities. No more does an operator arrive in town with a power dive on the court house and a snap roof (if the wings will stand it) and then announce that he, "Captain" Joe Blotts, late of some famous fighter squadron (it's never quite clear which) will for a fee condescend to take on a student or two.

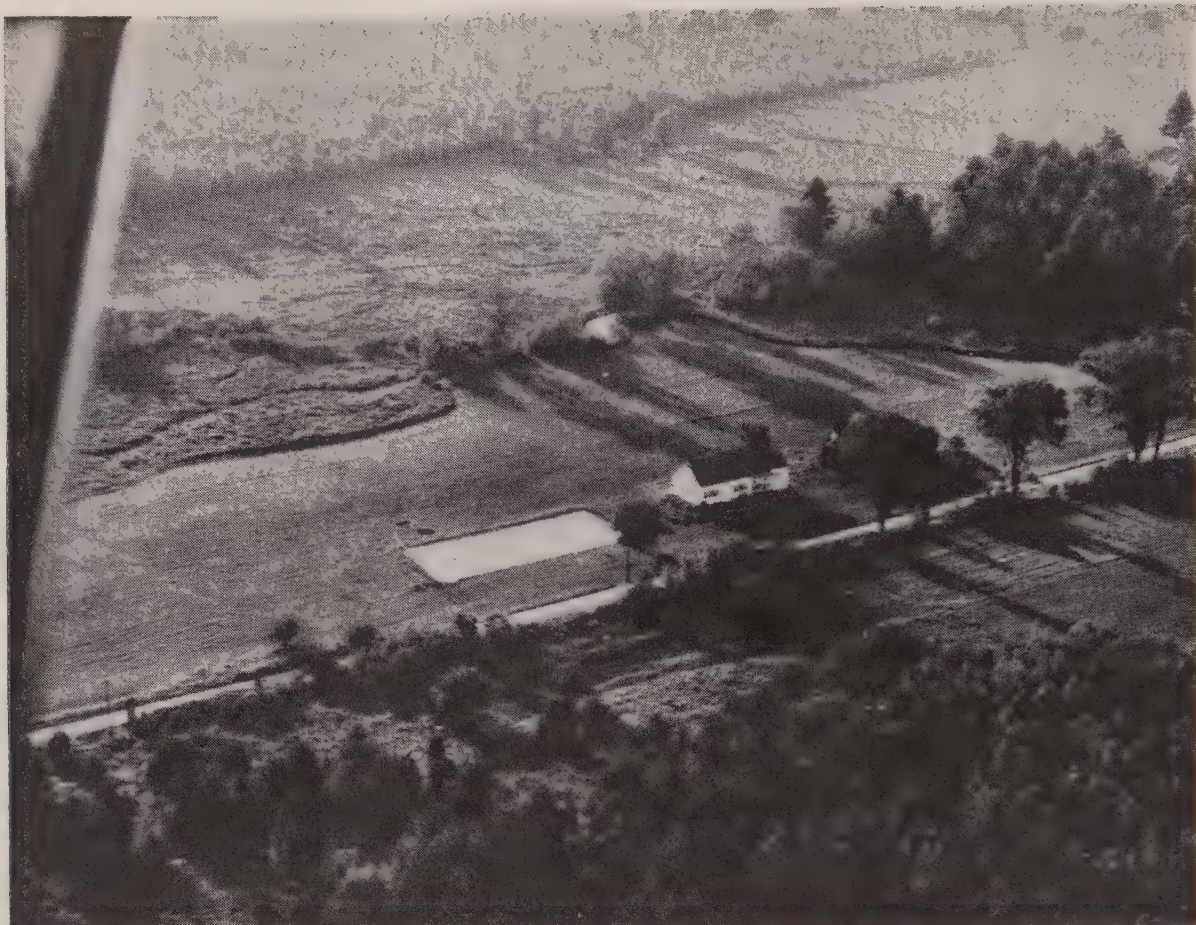
The modern operator with his top grade staff of instructors, new training equipment and mechanics, requires capital, good will, sales force and credit. It takes businessmen to procure these, and when good business practices are applied to even as screwy a business as teaching folks to lift both feet off the ground at the same time, it pays off.

The operator has modern instructors—mature fellows, perhaps not in years or looks, but mature in the ways of teaching, instilling confidence, and in getting results. They are educated in the little matter of acting like businessmen rather than "heroes." They have found that it pays to wear clean shirts, neckties, business suits, and to be soft spoken and even *polite* to the "cash customers." It's good psychology and cash in the bank to act as though it *was* a business matter rather than an adventure, even though it may be adventure for the student. And it *is* a business.

The modern instructor plans his air time to give the student a full measure of instruction, plenty of chances to learn some things for himself and to acquire confidence—all under the guiding eye of the instructor. He talks over the airwork with his student before and after a (Continued on page 48)

POPULAR and profit-making field will be one that is kept clean and in good order, that offers facilities for those not flying, and whose employees are always as neat and as orderly as their methods of doing business





LANDING STRIP behind house is 1,500 feet long, several hundred feet wide. Approaches are made over trees

Town And Country

*Airplane gets a city worker home to the
country oftener, quicker . . . and easier*

PLANE OWNER Shaw bought the house because it offered landing facilities for his new four-placer

FLYING FAMILY, the Shaws use plane to commute between N.H. and N.Y. Girls are learning to fly, too



MY FIRST investment in a flying hobby was made more than 10 years ago—even though I didn't buy my plane until last year. I don't just mean that I rented planes for an hour or two on week ends. I actually *prepared* in 1936 for what I have today. The war interrupted the fulfillment of my blueprints, but I knew what I wanted and I waited until I could get it.

It seems to me that some pilots don't think long enough before investing their hard-earned cash; they discover too late that the urge to fly is often not enough. I'm not suggesting that anybody wait 10 years before buying his own plane, but I am suggesting that prospective purchasers do a little more investigating of their needs before they buy.

I think that the most important requisites for owning a plane are knowing whether you'll be able to use it enough to make ownership worthwhile, and how much it will cost you *after* you put down the purchase price. Look ahead and if you're not quite sure that you're ready to buy, why not wait and continue renting for awhile?

Take my story. I don't think that it's typical except that I waited and now I'm a satisfied owner—and that *could* be typical. When I bought my plane everything was ready for it, from facilities to time. I'm a free-lance commercial artist, my income is ample and I've been my own boss since 1929. During World War I, time in the air service gave me my first taste for wings. I finished primary train-

ing in *Jennies* just before the Armistice. Flying has been my hobby ever since, even though at different periods it has had to be shelved temporarily.

Filling in the background: I have an office in mid-town New York City; we live in Hollis, L. I., and have a summer home in New Hampshire. The immediate family consists of my wife, Harriet, and daughters Marilyn and Nancy, 22 and 16, respectively. Our flying story actually began when we acquired the New Hampshire place.

In 1936 we were interested in buying a farm to develop both as a summer vacation home and eventually as a place to which to retire. Among several sites offered was one (75 acres) near Alexandria, N. H. There was a house and an old barn near the road, but it was really the fairly level field near the house, about 1,500 feet long and up to several hundred feet wide, that made me decide on this one instead of another. I had visions of a landing strip for a family airplane some day in the future, so that was the farm that became the Shaw summer home.

During succeeding summers we worked on the house, altering and painting, and even added an outdoor tennis court near one end. While the rest of my family spent entire summers up there I joined them only on week ends, traveling the 305 miles each way by car from our Hollis home. Seven to 10 hours over the road, depending on the traffic and the weather, usually left me tired and not too enthusiastic about that kind of transportation.

We had finally reached the point where we were ready to get the airplane and do something about the field. For our purposes we needed a four-place plane (just try to leave one member of my family on the ground) and having my own mind already made up I ordered a Stinson *Voyager*; then we sat down again to sweat out the production line.

One day last summer I received the good news and went out to Wayne, Michigan, to take delivery at the plant. Before I flew anywhere, I paid out \$5,520.00 for the plane, (*Continued on page 51*)

Commuter

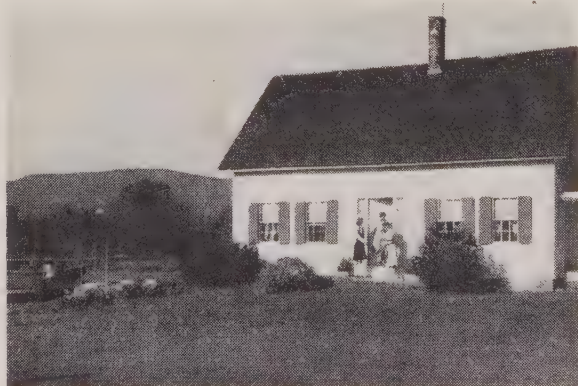
By HOWARD SHAW

As Told to Lee Irwin

NEIGHBORS joined the Shaws in building the flight strip. Getting field ready for operations cost \$43



HOUSE is headquarters for the flying Shaws. Stinson is parked behind the house alongside tennis court



JOB OPPORTUNITIES

By ALICE ROGERS HAGER

MR. T. P. WRIGHT, Administrator of Civil Aeronautics, recently startled economic hind-sighters by reaffirming his prediction (made first in 1945) that there would be 400,000 personal aircraft in the United States by 1955. Mr. Wright then paused long enough to let the doubting Thomases gasp, and followed with his explanation of the how's of his prediction and the why's of its reiteration. At the same time that Mr. Wright's prediction was made, the CAA offered a companion-piece estimate that by 1955 there would be 750,000 new jobs in aviation!

That's a lot of airplanes . . . and a lot of new jobs in an industry that already is supporting many hundreds of thousands. There are close to 100,000 employed in the airline industry alone, and with its expected growth in the next few years that figure could easily be doubled. Like the CAA and Mr. Wright, we believe in the future of aviation.

There is every good reason, despite what now appears to be a recession in aviation activities, to believe that both of these predictions are not just possible, they are highly probable. There is no doubt but that President Truman's Temporary Air Policy Board soon will call for immediate action to support an economically sound aviation development in this country. This alone will go a very long way toward opening up aviation's road ahead . . . a road of opportunity for the industry, for the research and development agencies, and most of all, opportunities for the young men and women of today who want careers in aviation.

Now is the time for those career-thinking young men and women to get ready for that expected

growth. A career will be there for those who want it . . . the high school graduate, the ex-G.I., and the college-trained man or woman. All will do well to consider the job categories in the aviation industry, pick out the line of work they prefer, and then . . . train for it.

Training for a job is one of the biggest steps in the direction of getting that job, and there are many schools, CAA-approved, that offer that required training. Most of them even go so far as to put their graduates in direct communication with employers in the field they have chosen.

In order to be of as much help as possible to the young men and women who want to get into aviation, SKYWAYS has compiled the most accurate information available on both job requirements and job opportunities in aviation. This information has been divided into two sections: Ground Jobs and Flight Jobs. The data given here is limited to ground job possibilities. Next month we will take up the flying jobs.

Within the aviation industry there are actually six main branches: (1) Aircraft manufacturing, (2) Engine, Prop & Accessory manufacturing, (3) Airlines, (4) Fixed Base Operations, (5) Military aviation, and (6) Government Agencies. For the most part we will confine our listing of requirements and opportunities to the first four, although data on both Military aviation and Government work also will be included.

Aircraft Manufacturing

Aircraft factories employ a great many workmen in both the skilled and unskilled categories. Many mechanics doing essentially the same kind of work they do with the airlines and at airports are used within the aircraft manufacturing industry. In addition, of course, there are the engineer and



N AVIATION

production specialists, chemists, metallurgists, and the usual business-office help. Of interest to career thinkers may be the fact that certain industrial executives maintain there is an increasing shortage of trained engineers.

Aeronautical Engineer:

Duties—Drafting, research, testing, production design. Specialists in aerodynamics, structure, engines, electrical systems, materials, hydraulics, metallurgy, turbine, fuel and combustion, etc.

Requirement—Completion of aeronautical engineering course at approved school, college or technical institute. Engineering degree.

Experience—None required for starting position. Shop experience is help. Qualification for employment is graduation in Aeronautical Engineering from college, university or approved technical training school or institute.

Salary—Pay varies in different localities, type of engineering, etc. However, an estimate is: Entrance position for college grad . . . \$2600 per year. Experienced engineer, depending on amount of experience, research, etc. . . . \$3400 per year up to \$10,000 or more.

Promotion—Draftsman or Junior Stress Analyst to Layout Designer or Senior Stress Analyst to Project staff member, Section leader, Project Chief, Dept. head and Chief Engineer.

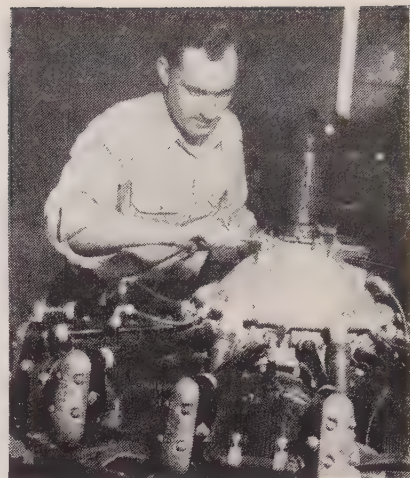
Stress Analyst:

Duties—Analyzing strength characteristics and deflections of parts and assemblies of parts of aircraft under various load conditions.

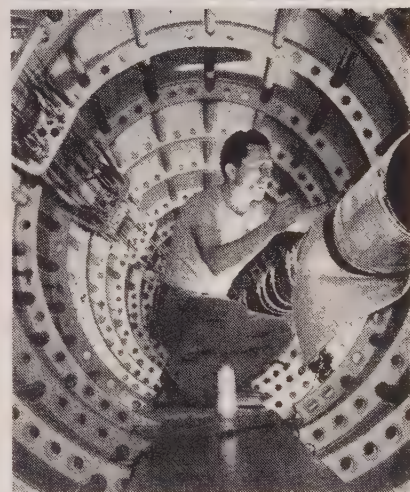
Requirement—College and Technical Institute graduate in engineering preferred.

Experience—Experience on sheet metal, fuselage types, various types of aircraft.

A & E MECHANICS, properly trained and who combine that know-how with an interest and zeal in their work, will find opportunities for employment and advancement in the field of aviation



COMMUNICATORS, according to a Gov't survey, will be needed in increasing numbers by airlines. Permanent appointments to CAA jobs are made on basis of competitive Civil Service examinations



SPECIALISTS such as tower operators, engineers, instrument technicians and shop workers will be in greater demand as activities increase and production is upped to meet the needs of aviation



Salary—Similar in most respects to that of straight Aeronautical Engineers. Beginner Analyst starts at around \$2600, work on up to Analyst with 5 or more years experience at \$4,000 to \$10,000. Sometimes more in top spots with large companies.

Promotion—Same as for Aeronautical Engineer.

Metallurgist:

Duties—Study and analysis of metals used in aircraft structure, components. Works closely with technical designers, engineers and stress analysts on quality control.

Requirement—College or Technical School graduates preferred, with specialization in metals.

Experience—Experience on control of materials, processes and process inspection.

Salary—Follows same line as Aeronautical Engineer, with beginner positions low, working on



**C. E. Brayton,
Pres., Brayton
Flying Service**

"Now that the full picture of the Air Age has been unveiled, it is certainly not overstating the case to say that for many, many years to come there are going to be more jobs in this field than there

are qualified men and women to fill them. . . . Training for careers in aviation has become scientific. . . . For young men and women, the opportunity for specialized training . . . and the horizons of careers in aviation are unlimited."

up to \$10,000 or more for experienced metallurgists.

Promotion—Similar to Engineer.

Aerodynamicist:

Duties—Design of aircraft, analysis of dynamic stability of aircraft. Research and test work in high-speed wind tunnels. Performance and load calculation of certain aircraft types, etc., vibration and flutter analysis.

Requirement—College, university or technical school education in engineering. Degree in engineering preferred in almost all cases, with graduate study in specialized phases of aerodynamics.

Experience—Graduate study in specific phases of aerodynamics, or experience in industry in calibrations and testing procedures for all speeds, etc.

Salary—Same in this category as is given under the

Aeronautical Engineer heading.

Promotion—Also same as Aeronautical Engineer.

In addition to the above listed positions for graduate engineers, there are these that require much the same in the way of education, experience, etc: Controls Engineer, Research Engineer and Physicists, Structural Designers, Plastics Engineer, etc. It might be well for the student engineer to consider specializing in such fields as turbines, fuel and combustion, etc., to meet the ever increasing needs in the field of jet-propelled aircraft, etc.

Aircraft Mechanic:

Duties—Repair and overhaul of aircraft, servicing and inspection.

Requirement—High school graduates often preferred. Completion of mechanics course (Aircraft) at CAA-approved school or technical institute. CAA license.

Experience—Can be employed immediately upon completion of approved aircraft mechanics course and upon certification by CAA. Some field experience preferred for the better openings within industry.

Salary—Runs about 60¢ per hour for apprentice mechanics; 80¢ to \$1 per hour and up for experienced mechanics, and \$350 or more per month for supervisory jobs. \$2160 to \$4800 on yearly basis.

Engine Mechanic:

Duties—Repair and overhaul of engines and related accessories. Servicing and inspection.

Requirement—High school or vocational school graduates. Completion of engine mechanic course (Aircraft) at approved school or technical institute. CAA license for engine mechanic.

Experience—Same as for Aircraft Mechanic, but in engine field.

Salary—Similar to that for Aircraft Mechanic. Sometimes established by Union-Management contract on hourly basis.

Promotion—Best advantage that can be held by holder of this license or that of Aircraft Mechanic is to have both an A. & E. license. Another advantage would be to acquire as much knowledge of gas turbines as possible so that mechanic can be one of the first to break into this new and expanding field.

Shop Workers:

Duties—Sheet-metal working, surface assembling, fuselage assembling, machine operating, final assembling, metal fitting, finishing, welding, tool making, mill and wood working, pattern making, plating, heat treating, blacksmith and maintenance work, etc.—just to list a few.

Requirement—High school education desirable, Trade school training very valuable. Knowledge of blue-printing and how to read blueprints. Mechanical aptitude advisable.

Experience—Experience in other industries where precision work is done is very valuable.

Salary—Experienced worker gets about \$1.40 per hour, in some cases plus overtime. A beginner or an apprentice averages about 75¢ per hour.

Manufacturing Personnel:

Duties—This category includes General managers, Superintendents, General foremen, Assistant Superintendents, Factory managers, Foremen, Tool designers, Production managers, Inspectors, Stock chasers, Planners, Material estimators, Time-study personnel, etc.

Requirement—Requirements, of course, vary greatly in this category. Much depends on the worker's initiative and ambition. An ordinary shop worker with a lot of ambition and job energy can literally work himself up to one of the above mentioned supervisory jobs. A college education or good business background will help in most cases. For the top jobs an engineering background is excellent.

Experience—Many of the positions mentioned above come as the result of exceptional work on part of man employed as shop worker. Usually some years' experience in manufacturing, preferably aircraft, is necessary.

Salary—Salaries for these jobs vary as much as the jobs do, but to take a middle course: a foreman, for example, averages about \$2 per hour . . . or \$80 per week. In some cases overtime is paid him, in other cases it is not. Rates of pay, however, average so that both overtime and non-overtime get about the same salary. . . say \$320 per month plus overtime, or \$400 per month without overtime. Jobs of a classification higher than foreman rate pay substantially higher, and jobs rated under foreman are paid less than a foreman. In most cases, depending upon size of plant, a General manager is a several thousand dollars a year man.

Office Personnel:

Duties—This group includes employees in the stenographic, secretarial, purchasing, accounting, personnel divisions, etc.

Requirement—High school and business school training preferred. College education is a requirement where competition is great.

Experience—The more office experience the better, although inexperienced help can be used in beginner clerical jobs in many cases.

Salary—Varies to some extent. An average might be \$25 to \$35 for beginners in some classifica-

tions; \$30 to \$50 and up for more experienced employees in jobs of greater responsibility. Managerial jobs go as high as \$100 to \$150 per week (all these salaries mentioned above are on a weekly basis), depending upon executive capacity attained, location and size of company, etc.

Aircraft Engine, Prop & Accessory Manufacturing

In this field, just as in the field of aircraft manufacturing, a great deal of specialization is required. A word with a counselor at one of the CAA-approved training schools will be most helpful in lining up a course of study that will best meet specific requirements.

Aeronautical Engineer:

Duties—Drafting, design, production, research, development testing, performance analysis, installa-

C. C. Mosely, Pres. of Cal-Aero Tech- nical Institute



"Your opportunity to get ahead in aviation depends on whether industry will expand and how many others have same training you have. Answer to first is obvious . . . industry will expand, and how!

And there is always opportunity for young man of courage who 'has what it takes.' Don't be discouraged by competition. Have courage to face competition and the will to train better. By good training you can establish your security for life."

tion, etc., in field of engines, props, etc.

Requirement—Degree from approved college or technical school (Aero. Eng.).

Experience—Practical experience in field of engineering, plus some specialization. First-job engineers work up via drafting positions, etc., within industry.

Salary—See Aero. Eng. under Aircraft Manufacturing.

Promotions—See Aero. Engineering under Aircraft Manufacturing.

Sales Engineer:

Duties—Operates in advisory capacity with design engineers and technicians. Sometimes heads sales staff and thereby works with distributors and dealers.

Requirement—College education usually required, plus some experience in aeronautical engineering.

Experience—Great deal of selling and executive experience. Technical experience in specific fields.
Salary—Can earn from \$7500 to \$25,000 or more a year. This is a job to work up to, and amount of salaries depends largely on manufacturer's production.

Technicians:

(Engine, Instrument, Prop, etc., specialists)

Duties—Research, testing, repair and overhaul service. Rebuilding.

Requirement—High school preferred, with training in particular field at approved technical institute or college.

Experience—Served apprenticeship, and experience in field.

Salary—Straight repair technicians average \$1.62 per hour (B classification), \$1.74 per hour (A classification). Technicians working directly with engineers and who do some design work themselves average \$62 to \$76 per week, plus overtime.

Mechanics:

Duties—Work on electrical systems, engines and propellers and instruments. Repair, overhaul, servicing.

Requirement—Same as for mechanic in Aircraft Manufacturing field, plus engine mechanics license from CAA.

Experience—Field work with some specialization in particular category, as Prop, Electrical systems, Hydraulics, etc.

Salary—\$2100 to \$4800 per year.

Promotion—To Foreman or Department head.

Radio Technician:

Duties—Testing and research, repair and servicing.

Requirement—High school graduates preferred, plus training in radio and radio theory at approved technical school or college.

Experience—Experience in aircraft radio desirable, either field or factory.

Salary—Runs about the same as repair technician's salary. In case of technician working on research and development, although not an accredited radio engineer, the salary is substantially higher.

Shop Work:

Employees in this category in the aircraft accessory field must meet requirements similar to this category in Aircraft Manufacturing field. Salaries average about the same, too.

Office Personnel:

Similar in requirement and salary as this category in the Aircraft Manufacturing field. Lines of promotion are also similar to Aircraft Manufacturing field.

Airlines

Perhaps the greatest expansion in employment during the next few years will come in the airline field. This will be due to a consistent upsurge in passenger and cargo carrying via the airlines, charter and feeder line services.

Reservations:

Duties—Handling requests for space reservations by phone or in person. Advice on flights or itineraries. Making up tickets. (Duties are combined in one job in small offices; separately in larger ones.)

Requirement—High school graduate with some business experience.

Experience—None required, although business experience preferred.

Salary—Male, \$120 to \$190 per month; female, \$110 to \$165 per month; \$150 to \$300 for Repre-



**T. B. Lyons, Pres.
of the Pittsburgh
Institute of Aero.**

"Those who seek careers in aviation choose one of the most romantic and most promising in American industry. Rapid expansion of airline fleets and tremendous increase in privately owned aircraft will continue to create a demand for thousands of technically trained men in field of aviation. Potentialities for expansion in aviation are almost limitless. In fact, we can discern within two decades a civilization controlled by aviation . . ."

sentatives; \$250 to \$400 for District Managers.
Promotion—Reservations agent to traffic representative, City Traffic Manager and District Manager.

Passenger Agents:

Duties—Taking space reservations, ticket sales, baggage checking and weighing, checking passenger list, arranging limousine service, etc. At small stations Passenger Agent may have charge of all loading activities, manifest and route air-mail and freight.

Requirement—Same as for Traffic & Reservations. Some openings for women.

Salary—\$150 to \$400 per month. Higher level jobs are better paid as they assume executive responsibility.

Promotion—Ass't Passenger Agent, Agent, Chief Agent, Station Manager, executive position in Traffic and Operations Dept. This is one of best

fields for advancement on the business side of airline work.

Tariffs and Scheduling:

Duties—Development of rate structures and tariffs, under CAB regulations. Planning maximum use of aircraft in cooperation with Maintenance and Operations. Work on ATA Tariff Committee. Compilation of joint rates with other airlines research on traffic problems, and trends and development of statistical data.

Requirement—Same as Traffic and Reservations, with additional training in mathematics, market management, business statistics, correspondence, business law, economics, market analysis, transportation agencies, transportation law, rate making and structure, procedures in rate cases. For beginner positions, business training or experience is desirable, with some college education in

Oliver Parks, Dean of Parks Col. Aero. Tech.

"The aviation industry is now on soundest footing in its history . . . not most prosperous, but soundest. Never before in aviation history has demand been so great for . . . hard working, well trained men. The essence of leadership is loyalty to management. Those with habitual attitude of willingness to learn and to apply themselves are in great demand. If you are that kind of man, aviation offers you today the greatest opportunity of its history . . ."



commerce or business administration. Valuable training is in an Airline Traffic course.

Salary—\$200 to \$300 per month.

Promotion—Clerk, Assistant Specialist and Manager.

Sales (Traffic and Cargo):

Duties—Calling on business firms to solicit shipments by air and to develop regular users of airline transportation.

Requirement—High school and some college training.

Experience—This is not a beginner's spot. Requires business experience, selling ability and specialized knowledge of air-cargo handling, rates and schedules. Best way into this position is via Traffic Dept.

Salary—\$150 to \$300 per month, plus bonus or commission.

Promotion—Same as Traffic and Reservations.

Communications or Teletype Operator:

Duties—Operating teletype machines, handling and filing messages.

Requirement—Two to four years of high school. Typewriting and teletyping knowledge. Training for radiotelephone or radiotelegraph license. Restricted Third Class license. Must be between 18 and 35 yrs. old. Openings for women.

Experience—Typewriting and teletyping experience. Radiotelephone and radiotelegraph.

Salary—Teletypist: \$125 to \$160 per month. Airline radio operator: \$130 to \$245 per month. CAA Aircraft Communicator: \$2,168 to \$4,150 per yr.

Promotion—Junior Operator to Senior to Lead with 2nd Class radio license to Ground Station radio operator.

Flight Control Clerk:

Duties—Handling and posting of messages and data on flights scheduled and en route.

Requirement—High school graduate to two yrs. of college. Age range: 23 to 50 yrs.

Experience—Training in Traffic and Operations.

Salary—Flight Clerk: \$110 to \$200 per month. Superintendents: \$300 to \$700 per month.

Promotion—Flight Control Clerk to Assistant Flight Superintendent to Flight Superintendent to higher executive positions in Operations. (CAA certificate required for Flight Superintendent, or Dispatcher. Many of these jobs go to former pilots or meteorologists. College training and aviation experience count heavily).

Stock Clerk:

Duties—Receipt of supplies and their issuance. Keeping stock records, etc.

Requirement—High school graduate.

Experience—Some previous clerical experience, preferably in aviation or automotive stock and stores work.

Salary—55¢ to 95¢ per hour.

Promotion—To Supervisory Clerk.

Meteorologist:

Duties—Assembly and analysis of weather data from Weather Bureau and aircraft in flight. Preparation of weather maps and forecasts. Transmission of weather information to Flight and Operations.

Requirement—High school graduate plus college or technical school course in Meteorology. 21 to 35 years old.

Experience—No specific experience, but demonstrated ability necessary.

Salary—Junior: \$120 to \$150 per month. Senior: \$150 to \$300 per month. (Continued on page 54)



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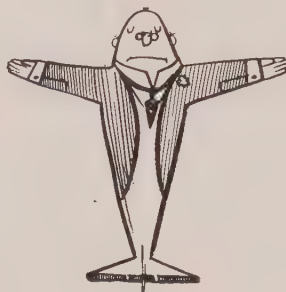


By S. H. Warner and Robert C. Osborn

Do A Good Turn—Do you remember how you were fighting the controls to fly straight and level on our last hop—and what a mess you made of it? I don't want you to feel too foolish now, but take your hands and feet off the controls and see what happens. Notice how the nose of the plane wanders off course and up and down with the air currents, but always returns to level flight again in a few seconds. That is "inherent stability" built into airplanes these days. A modern plane can fly itself better than you can during your first few hours of instruction. This proves you really have nothing to worry about. All you have to do is learn how to steer it where you want it to go.

Let's learn to steer it around corners today. Of the three basic flight maneuvers, climbs, glides, and turns, the latter is perhaps the most important. It certainly is the most difficult to perfect.

If you turn too sharply in an automobile, you tend to skid to the outside of the turn. It is the same in an airplane. When the turns in the road are increasingly banked, cars can make progressively sharper turns without skidding. Again it's the same, only in an airplane you make your own bank as you go along. When making a turn in a plane, however you also have to guard against slipping. This results from turning too slowly for your angle of



"Modern airplanes are inherently stable, fly hands-off"

bank and results in your sliding down the inside of the turn.

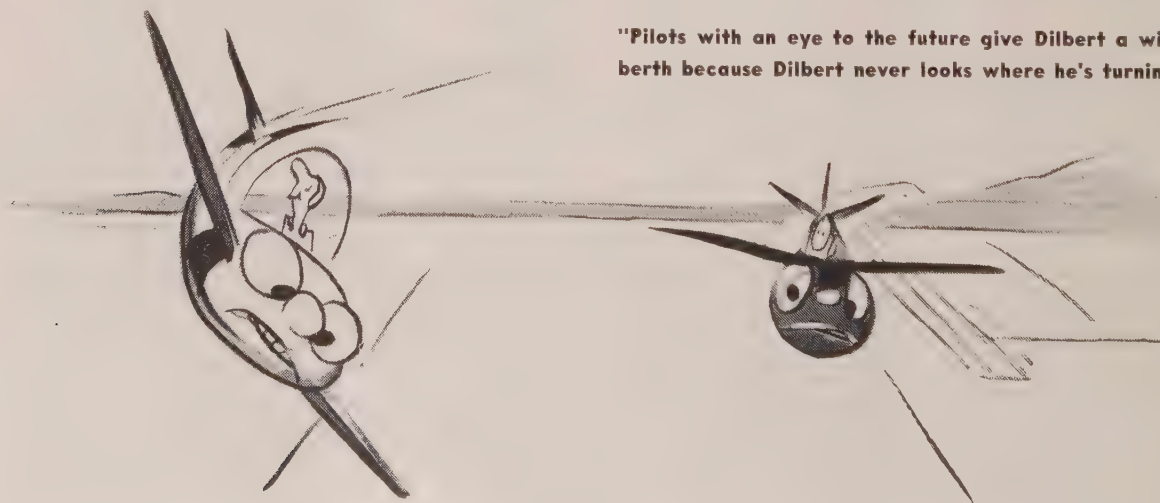
At this point it is well to realize that the skid is more dangerous than the slip. A skid *decreases* your airspeed, thus putting you closer to a stall. In a slip you lose some altitude, but no airspeed. Also, in this position the air strikes the low-wing sides of your rudder and vertical fin, thus automatically increasing the turn and decreasing the slip.

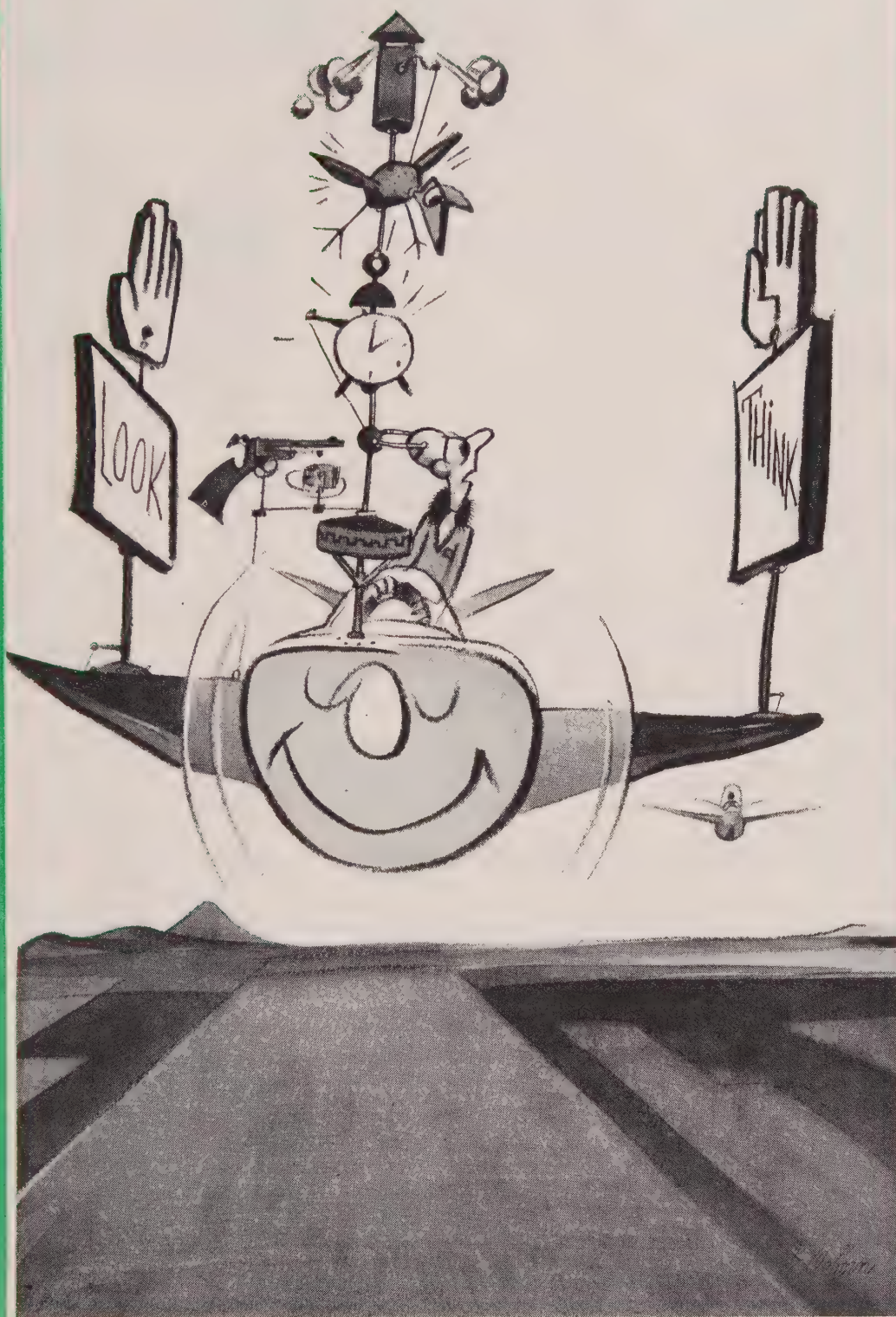
Let's try a turn, using approximately 30° bank. First, look all around for other planes, particularly behind you and to the side on which you are going to turn. Now sit relaxed and make a left turn. Remember, left pressure on the stick to make the aileron bank the plane to the left, and pressure on the left rudder pedal to make the nose come around. No! No! Not a barrel roll!

What went wrong was that you forgot to neutralize your ailerons when you approached your 30° bank. Don't forget that ailerons keep increasing the bank as long as you apply pressure on them. As a matter of fact, due to the difference in the "lift" of the wings when banked, there is a slight tendency for the plane to bank more steeply, even with the ailerons in neutral. Thus for a perfect turn, you must exert very weak opposite aileron pressure after you have banked the plane to whatever angle you want.

(Continued on page 62)

"Pilots with an eye to the future give Dilbert a wide berth because Dilbert never looks where he's turning"





"They finally found a way to make Dilbert think in the air"

Jets for the Fleet

(Continued from page 20)

else was doing." This advice was so well followed that Kroon, Rodgers, Thompson and the rest of the compact design and development team which made up the Aviation Gas Turbine Division, Philadelphia, did not know until the summer of 1943 that General Electric had produced a number of Whittle-type radial-flow turbojets for the Bell XP-59A. Nor did they learn until several months later (through Combined Technical Intelligence, Army-Navy-British) that the *Jumo* and BMW turbojet units in German jet fighters were of axial-flow design.

First model of the 19-inch Westinghouse jet engine was the 19A, which developed 1,200 pounds of static thrust for a weight of 830 pounds. It first ran in March 1943, and passed its 100-hour endurance test in July. The second engine was flight tested as a booster unit in a Goodyear FG-1 *Corsair* in January 1944, and later that year in the aft fuselage of a Martin JM-1 so that a full flight-testing crew could go along for the ride and see what happened.

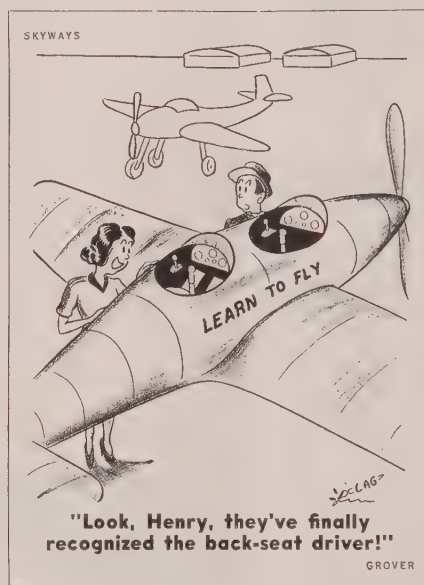
The 19B *Yankee* (Navy, J-30) was the improved version, with a thrust of 1,380 pounds. This was tested in March 1944, and became the powerplant of the McDonnell twin-jet XFD-1 later called the *Phantom*. A year or so later an advanced production model, the 19XB-2B of 1,600 pounds of thrust was set up to be turned out by Pratt & Whitney for 30 of the *Phantoms*.

In the meantime, however, the tactical boys were shaking their heads. First under Halsey, and then in the fast carrier task forces of Mitscher and McCain, highly efficient carrier techniques for take-off, landing, stowage, maintenance, rearming, etc., were worked out for the standard fighters, scout bombers and torpedo bombers powered by the propeller and engine combination. There were serious doubts as to the ability of jet-propelled planes to fit into this complicated picture. With their supposedly required long run, for example, could jet planes take off from a carrier deck? Without the braking effect of the propeller, could they slow down sufficiently for difficult carrier landings? If they had to be "waved off" at the last minute for another run around, could they accelerate quickly enough to do this with safety? And how about range? These were all questions which stemmed from the inherent technical characteristics of the turbojet.

The BuAer engineers had their answers, however, and in the light of later experience, we know they were sound. Nevertheless, partly because of these considerations and partly on account of the uncertainty as to how long it would take to push through—even in wartimes—a radical development and adapt it to carrier use, an interim solution was put into the works. The doctrine of the "composite-engine" aircraft was developed, and late in 1942 Ryan Aeronautical was given a contract for a fighter design embracing a reciprocating engine and propeller in the nose (to give necessary carrier take-off and landing characteristics and cruising range), and a turbojet in the tail to give the high performance essential for combat. This was the XFR-1, *Fireball*. Some 70 of these were produced, and one fighter squadron equipped with this plane was in

advanced training in the Pacific when the Japs surrendered. Speed of the *Fireball* was about 300 mph on either engine, although maximum speed with both engines was not spectacular (410/420 mph). The *Cyclone* (1,300 hp) engine was regarded as the main powerplant, to be normally used for take-off, climb, cruising and landing. The General Electric I-16 turbojet unit (Navy, J-36 with 1,600 pounds of thrust) was considered an auxiliary engine only, to be used with the front engine for accelerated take-off, overload take-off, accelerated climb and maximum high-speed combat conditions (the old W.E.P.—war emergency power).

The next step was the all-turbine Ryan XF2R-1, contract for which was given after the General Electric TG-100 (Navy, T-30) propeller-turbine was run in on the bench in the spring of 1944. This unit was specified for the nose and the J-36 as tail booster. The XF2R-1, called the *Dark Shark Fireball* at Muroc Lake on account of its long sharp



nose, was flight tested in November 1946. This long nose is a result of the fact that the T-30 turboprop is almost twice as long as the *Cyclone* engine in the nose of the *Fireball*. This is partially offset, however, by the elimination of the engine mount, large oil tank and other accessories required by the piston engine. At full speed of the aircraft, the T-30 delivers about 1,800 shaft horsepower, with some 300 to 400 hp in the form of jet exhaust. One of the biggest problems in the development of the XF2R-1 was gearing down the high rpm (over 16,000) of the gas turbine to the low rpm (around 2,100) of the big prop. This required a reduction gear ratio of about 8:1. The T-30 is roughly equivalent to a 2,000-hp piston engine, but its installed weight is only about 1,000 pounds as against 2,600 for the Pratt & Whitney *Double Wasp*, for example. The difference in weight is equal to over 250 gallons of kerosene—enough for an extra hour's running time.

From early 1942 to mid-1945 the Bureau of Aeronautics was engaged in a special attempt to discover the most satisfactory types of engines for each tactical job. A number of interceptors, fighters, dive bombers and torpedo bombers were designed with jets alone, piston engines with turbojets, and

turboprops with turbojets. The *Phantom*, *Fireball*, and XF2R-1 are examples of each class which eventually saw the light of day. At the time of the Internat'l Aircraft Gas Turbine Engineering Conference, held by the AAF and General Electric at Swampscott (Mass.) in May and early June 1945, BuAer's view was that "in all items of performance excepting high speed at high altitude, the propeller-turbine is superior to the turbojet, and the pure jet does not appear suitable as a standard carrier aircraft."

Today, two years later, the thinking is somewhat different, and the main reason is the highly successful series of jet-fighter trials carried out with the McDonnell *Phantom* in July 1946 from the 930-foot deck of the U.S.S. *Franklin D. Roosevelt*, first of the CVB-class battle carriers.

The carrier tests, according to the contract, called for "five launching and landings aboard a carrier at sea." On the first test the *Phantom* used up only 460 feet of the 930 feet available, and on the other four tests, it used even less, the shortest being 370 feet. Landings were successful between the acceptable 85 to 90 mph. The highly criticized "wave-off" operation was demonstrated with flying colors.

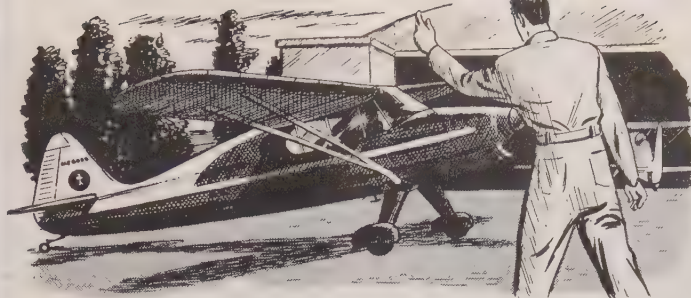
That left range the only other problem. Although range was not tested during these trials, endurance tests of the *Phantom* at Patuxent and other places indicate that getting a 1,000-mile range, cruising on one jet engine, is possible. This compares with the standard cruising range of about 1,500 miles for the *Hellcat* and *Corsair* in Pacific operations during the war. In the light of the demonstrated 2,000-mile plus non-stop flight of the P-80 with over-size drop tanks, and the standard range of 2,000 miles claimed for the Republic P-84, it is certain that the successors of the *Phantom* will have a range at least equal to the piston-engine fighters' wartime range of 1,500 miles.

These trials did two things for the Navy's jet hopes. They answered the criticisms made against the pure jet carrier fighters and they demonstrated a speed of more than 500 mph, and take-off after less than two minutes' warm-up. Sure, there are plenty of other problems in detail, as faster and heavier jet fighters come into the picture, but the tests proved the main issues were settled, and the transition to jets is now going on.

During the winter of 1946-47, two single-jet carrier fighters were announced using more powerful units than the Westinghouse J-30 and General Electric J-36, both of which were in the 1,600-pounds of thrust class. The Chance Vought XF6U-1 *Pirate* is powered by the Westinghouse 24C (Navy, J-34) axial-flow turbojet which had a design thrust of 3,000 pounds. The *Pirate* has been announced by the company as the successor to the *Double Wasp*-powered *Corsair*, although the still further advanced XF7U-1 is well on the way. The other jet fighter is the North America FJ-1 with the General Electric TG-180 (Navy, J-44) which has a thrust of 4,000 pounds. Like the Air Force's P-84 *Thunderjet*, powered by the same unit, the air scoop is in the nose. Both the F6U-1 and FJ-1 have announced speeds in the familiar phrase (as the *Phantom*) of "well over 500 mph." Finally, in the pure jet class, late May saw an announcement of the twin-jet McDonnell XF2H-1 *Banshee*, a more powerful version of the *Phantom*, with two Westinghouse J-34

(Continued on page 44)

Standard of California's **PLANE FAX**



A page of service tips for private flyers and fixed-base operators

Airport dealers to carry new accessories



As an additional service to flyers, Standard Airport Dealers are now adding a complete new line of top quality aviation supplies. With everything from tires and tubes to flashlights and plexiglass cleaner, in the nationally famous Atlas line. Standard Airport Dealers now offer complete, one-stop service. For cross-country flyers the availability of these new supplies is a sure time- and money-saver, as Atlas Aviation supplies may be purchased on Chevron National Credit Cards.

Check tires for safer landings

Tires don't have far to roll, it's true, but it is still important to keep them up to snuff. And it's too late to check your tires when you're circling to come in. Watch for bruises, small cuts, and make sure of *proper inflation* before taking off. If a new tire is in order, your Standard Airport Dealer can now supply you with superior quality Atlas Aircraft Tire. Their "safety factor" and durability is due to the engineering which produced the best military planes.



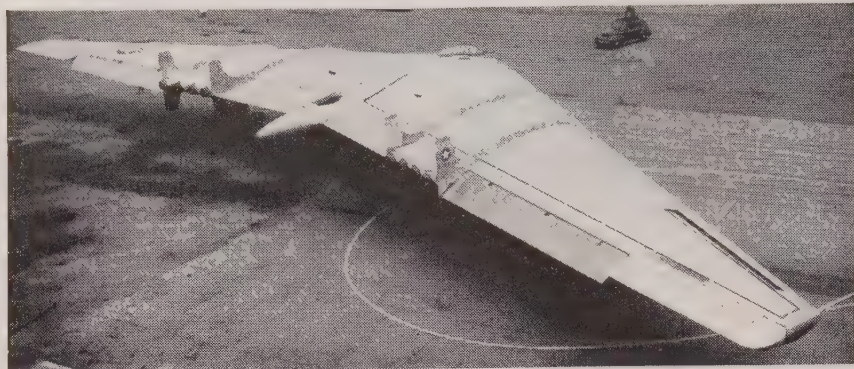
How to reduce pre ignition danger



Proof of a good spark plug is in its capacity for operating at high engine output without overheating or causing pre ignition. Long life is another merit to be looked for in spark plugs. These three characteristics are all found in Atlas Champion Aircraft Spark Plugs. The Atlas Champion's resistance to pre ignition is made possible by a special insulating material, the finest known to ceramic science. Your Standard Airport Dealer can tell you the full story of Atlas Champions.

Chevron National Credit Cards Available
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Jet Flying Wing

Called the Air Force's mightiest bomber, the Northrop YB-49 *Flying Wing* is powered by eight jet engines capable of developing 32,000 horsepower. The *Flying Wing* is expected to operate at altitudes in excess of 30,000 feet. All crew quarters, cargo space, etc., are housed wholly within wing.

Built-In Skyhook

(Continued from page 23)

tions, Dr. Greene had estimated a total maximum range of five hours and 30 minutes—a tribute to the accuracy of his computation. He explains that the 10 minutes' variation between actual and computed range is due to consumption saved in his long let-down.

If there'd been no wind at all at his cruising altitude, he would have made just about 520 miles in his flight. As it was, an average tailwind of 20 mph made up the difference. The winds aloft, of course, had been taken into consideration in his pre-flight planning.

Dr. Greene's sure-fire fuel calculations paid off in great peace of mind during his let-down into New York. The last 2,000 feet was made entirely on instruments, and the nine spare gallons of fuel in that right tank was just like money in the bank.

All the way on that trip—during take-off, climb, cruise, and let-down—Dr. Greene kept the Fairchild indicating a steady 96 mph. And all during the climb and cruise, he kept his throttle barely cracked back from wide-open position. The first major throttle adjustment was made for the let-down, in which a steady rate of descent of between 300 and 400 feet per minute was maintained. Cruising at 96 indicated at around 12,000, Dr. Greene actually enjoyed a true airspeed of around 120, plus the tailwind bonus.

For maximum performance, familiarity with carburetion techniques is a "must." On take-off, manufacturer's instructions should be followed: full rich mixture, and throttle cracked back a bit for the climb to 5,000 feet. At that altitude, Dr. Greene starts leaning out the mixture to the best power setting, and stays a hair on the rich side of that setting until the optimum cruising altitude is reached. While at cruising altitude, he leans it to the point where any further leaning would mean a drop in RPM.

The optimum cruising altitude depends upon a compromise between cruising speed and range. The highest cruising speed at maximum cruising power will be obtained at the highest altitude at which this power can be obtained. For unsupercharged engines, this will be about 7,000 feet.

Below 7,000 feet there will be a loss in cruising speed accompanied by a corresponding loss in range. Above 7,000 feet there will be a slight loss in cruising speed accompanied by a large gain in range using less power.

Maximum range will be obtained (no wind) at an indicated airspeed of about 50 per cent higher than the flaps-up stalling speed. The maximum range so obtained will be the same for any altitude. However, since stalling speed plus 50 per cent is a very low indicated airspeed for getting there in a hurry, it is necessary that high altitudes be used to make a low indicated airspeed correspond to a satisfactory cruising speed.

Dr. Greene has two suggestions for the let-down procedure. First, adjust the mixture to a shade on the rich side. Second, plan ahead so that you don't wind up over your destination airport at an embarrassing four or five thousand feet.

Besides getting the most for the gasoline dollar, there's a lot to be said in favor of the high-flying, long-range Greene system. Probably most important to private pilots who've sweated out the job of refueling at a strange airport is the elimination of in-between stopovers. Under any but the most optimistic circumstances, any refueling stop means a half-hour out of the day's travel. It's much easier from all angles to breeze past those intermediate stops at 10,000 feet or so, with plenty of gas to spare.

For a sizeable hop—say anywhere over 300 miles—altitude can't be beaten as an aid to getting the jump on the weather. The X-C pilots who barrel along at three or four thousand feet have to make some substantial detours when they run into a series of thunder-showers or patches of bad weather. But perched up on top, anywhere from 7,000 feet on up, you can see any weather building up as far away as 100 miles, which gives you a chance to make a very gradual change in heading to go around the unpleasantness on a great circle. Low-altitude dodging in and out of thundershower corridors wastes a lot of time and gasoline.

Flying contact is a lot simpler at high altitude, too. The terrain of practically a whole section is spread out, map-like, at 12,000 feet. A whole string of check points can be seen

(Continued on page 46)

jet engines. This job should be considerably faster than the two just mentioned.

All through the spring of 1947 powerplant engineers, the industry generally and the armed services were buzzing with the question of Britain's "lead" in the aircraft gas turbine field. This came to a head with the announcement by Rolls-Royce, Pratt & Whitney and the Navy that the 5,000-lb. thrust Whittle-type *Nene* turbojet would be produced in the United States under license and would be the powerplant of a new carrier-based fighter by Grumman (the XF9F-2 scheduled to fly this month. (See *Skyway* March 1947 issue for a cutaway of the *Nene* and a report of its initial testing in this country.) One prototype of the new Grumman F9F will take an Allison-built Model 40 turboprop unit of 4,000 pounds of thrust powerplant of the *Shooting Star*. This jet engine is similar in size and capacity to the *Nene*, and use of these Whittle-type gas turbines represents the Navy's first use of jet units with centrifugal compressors as main powerplants for carrier fighters. Incidentally, although the production of the *Nene* in the U.S. was widely hailed as a step which brought this country up even with the British jet developments in one stride, it actually will have little effect on the relative position of the two countries in this regard. Britain is unquestionably ahead in the development of the Whittle-type turbojet with centrifugal compressor, (less important in the long run than other types), in turboprops now actually under flight test, and in the application of gas turbines to a definite Government-sponsored program of commercial aircraft types. On the other hand, the United States has the lead, for the present at least, in the important axial-flow turbojet field, and is far ahead in its application to high-speed multi-jet bombers, several of which are now flying. The entire current crop of American jet engines by Westinghouse, General Electric, Allison and the Pratt & Whitney-produced Rolls-Royce *Nene* are powering Navy jet aircraft with advanced units by Westinghouse, Pratt & Whitney and other companies coming along.

The spring of 1947 also saw the announcement of two composite-powered Navy aircraft. The first of these was the Martin XP4M patrol bomber with two P & W *Wasp* Major of 3,000 hp and two Allison J-40's of 4,000 hp (at 375 mph)—four engines in two nacelles. This combination is expected to provide high speed, long range and great flexibility. The other was an advanced version of the original Ryan *Fireball*, the XFR-4. It retains the Wright *Cyclone* 1,300-hp engine in the nose but substitutes the much more powerful Westinghouse J-34 as tail unit instead of the General Electric J-36. A feature of the XFR-4 is the use of flush entry type air scoops, as in the modified P-80.

Present Navy carrier fighters in the 500-600 mph hour class have presented problems that are still unsolved. More powerful jet and rocket engines, which will enable them to penetrate the transonic and supersonic realms, will bring greater problems. The Navy has always managed to lick its problems as they arise; there is no need to fear that they will not continue to do so, in cooperation with NACA, the industry, and other agencies.

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Edited by

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For Winter Storage

(Continued from page 26)

ing of light oil—to protect metal props against possible corrosion and wood propellers against moisture penetration. When a plane is definitely going to be inactive for a long time, it is sometimes better to remove the propeller and pack it away. If this is done, the exposed propeller shaft or mounting flange should be coated with light oil or grease and then covered with clean rags.

To prevent moisture from getting at the internal rust-sensitive parts of the engine and its accessories, all openings should be sealed as a minimum precaution. Simplest and cheapest method is to use liberal amounts of ordinary masking tape on all exhaust openings, vents and air intakes. For larger nose cowl openings, sections of waterproof packing paper can be fastened in place with tape. As a safeguard, small ribbons of red cloth should be fastened where a vent is sealed, to prevent missing those small spots when the plane is returned to service.

For complete protection, an additional engine operation must be performed before the plane is started on the proofing routine. One part of standard engine preservative compound is added to every three parts of oil in the engine oil system. Then the engine should be run sufficiently to get the oil hot and spread the mixture throughout the entire engine. The plane may then be flown, if necessary, without affecting the engine efficiency or it may be stored for long periods without resorting to "pickling," or spraying the cylinders internally with preservative.

No engine is adequately prepared for storage unless *all* spark plugs are removed and replaced with familiar silica gel dehydrator plugs. Ignition leads should then be covered to prevent damage and all magneto vents sealed with tape.

Getting on to the rest of the airplane, all large openings in the wings and fuselage should be sealed; openings on high-wing planes usually being found at the point where the struts enter the wing covering. Regular drain holes must be left open to allow any moisture, formed by temperature changes, to drain out. Over-all nylon wing covers, if installed for outdoor storage, effectively block movement of the controls, but if the wings are not protected in this way, a webbed canvas strap holding the control stick or wheel full forward will lock the surfaces. Tandem two-place planes may be locked by strapping the rear control stick in the full forward position with the front-seat safety belt.

Whether indoors or out, all steel control cables, nuts, bolts and other exposed steel parts are especially susceptible to rust. While standard rust preventive compounds are preferred for all-around use, some operators and plane owners use ordinary lubricating grease or vaseline, liberally applied, for storage protection only. If the rust preventive compound is used, no action is necessary when the plane is returned to service, but any grease or vaseline applied to cables, bolts or nuts, exposed landing gear surfaces, worm gears or any other like part needing protection, should be removed and the parts lubricated normally before the plane flies. While the grease or vaseline will not effect the operation of the parts unless dirt is attracted to fairleads or pulleys, they are in-

tended only for protection and not lubrication.

As an example, a list used by Bill Bohlke, airport and service manager at the County Airport, Spring Valley, N. Y., includes the following parts checked for protection on his planes: tail-wheel assembly, especially the leaf spring; main wheel retaining nuts, all control cables including brakes, all strut connecting bolts and nuts and landing gear bolts and nuts. Bill has a large Quonset-type main hangar, two T-hangers and also utilizes an outdoor area for parking and storage so he has had experience with all types of storage treatment. His viewpoint is that, no matter where the plane is put, under a roof or outside, it still needs a proofing job.

When the proofing is completed, all the work can be undone by one vagrant gust of wind *unless* the plane is securely tied down. Indoors there is no danger from high winds as long as doors are secure on T-hangers, but planes in large public hangars are sometimes damaged when doors are carelessly opened on windy days. Outdoor storage calls for extreme care in semi-permanent tying down to prevent possible twisting or lofting of the plane during storms.

One inventive private-plane owner who parks his plane outdoors at a Westchester, N. Y., airport, uses a balanced leather strap and spring combination tie-down rope. Once his plane is fastened in place, he has no worries about varying tension because the spring compensates for all changes due to the weather. The combination is heavy enough to hold the plane solidly even in high winds.

The weakest point in tying down is at the



tail wheel because the light empennage is subject to a whipping motion which often frays ropes in a very short time. A leather or heavy canvas-covered chain hooked around the tail-wheel spring or yoke assembly will take care of the fraying, but the tie-down rope or cable must be anchored as securely as possible, with very little slack. A low, padded wooden horse, securely braced in the ground, makes a good tail wheel hold-down rack, but if this method is used the tail-wheel assembly must be strapped to it tightly to prevent any movement.

With proper care any airplane will be adequately protected indefinitely against any kind of not-too-violent weather conditions. As an added virtue, weather-proofing insures a plane's being put back into flying use faster and less expensively than if the owner attempts time or money-saving short cuts.

Without attempting to point a moral, a twist of the old adage says, a dollar for prevention is better than ten for cure.

Built-In Skyhook

(Continued from page 44)

at a glance. Down low, they crawl by, one by one . . . and it's sometimes an unpleasant guessing game to wait for the next one to turn up on the horizon. If the weather's too overcast to fly way up high, it is suggested that the higher you go, the better the results obtained. But, nobody should deliberately fly into marginal weather.

Incidentally, Dr. Greene—whose personal planes have been called "baby airliners" because he equips them with virtually every instrument available—has a couple of ideas on weather flying and navigation worthy of note. He prefers to fly by radio in good weather and contact, as far as practical, in bad. Thus, he piles up experience in radio navigational techniques, the pilot's "third arm" when he needs it. If the radio should go sour in good weather, nothing's lost.

Dr. Greene's tank-switching routine for gas supply computation naturally applies only when the ship is equipped with two tanks. In a one-tank airplane, it is possible to get an idea of the supply left, after the ship has flown half of its placarded range.

The importance of checking winds aloft for a high-altitude cross-country can't be over-emphasized. "If the weather bureau thinks you're crazy, asking for winds up to 12,000 feet, tell 'em you're flying a P-51," advises Dr. Greene, who occasionally has run into doubting Thomases who don't believe a lightplane should ever go much over 5,000 feet. However, knowledge of head or tail winds is of vital importance.

Incidentally, the cruising speed benefits given by altitude can often offset what would be a tough headwind opposition. For instance, a 30-mile headwind at 10,000 feet would be preferable to a 20-mile headwind at 2,000.

Dr. Greene doesn't guarantee that his system will work *first time* for everybody. It takes considerable experimentation and development of a sense of feel, plus a highly critical ear, to get that just-perfect throttle mixture combination which is the secret of success in high-flying. In time, the average pilot can develop the expert's touch.

Private pilots can thank Dr. Greene for another in a string of outstanding contributions to light-plane progress. His most outstanding achievement to date, of course, has been the stall warning indicator which he developed in conjunction with the CAA. The indicator which sells for around \$35 and can be installed on any lightplane for under \$10, has made trouser seats obsolete as the only sure fire indicator of an impending stall. It is so reliable that insurance rates are reduced for planes equipped with it, which ought to be indication enough of its value.

Dr. Greene has some more gadgets in the development stage, designed to make flying safer and more fun. As long as he keeps coming up with these devices to keep erring pilots from "thinking" themselves into trouble—and as long as he continues working out blueprints for greater enjoyment and utility like his cross-country system—you can bet that he'll continue to enjoy an enviable reputation as the flyer's friend. Which is good, because in these trying times if anybody needs a friend, it's the poor, bewildered man who's been bitten by that most savage of insects—the flying bug!

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(Continued from page 31)



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Write for 1947-48 Bulletin

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lesson, helps him with his log book and generally works *with* the student not *at* him.

The modern instructor too, is a businessman. In these days, you have to be. You can't live on glory. He is usually a married man with bills to meet and a couple of youngsters who need scooters, diphtheria shots and haircuts. One of the greatest headaches of the unbusinesslike operator is the rapid turnover of his teaching staff. To prevent this, the businessman-operator must pay good wages, pay them consistently and cooperate with his men. The businessman-operator will see to it that his instructors *can* meet their obligations, and feel that they *are* a part of the permanent organization. Instilling this feeling in an instructing staff is a neat trick but one that does not require a magician. It requires the operation procedure of a businessman rather than an "aviator."

Each instructor must be guaranteed enough students to keep him busy, he must be furnished with good, safe and reliable aircraft with which to *keep* busy. The instructors must be furnished with enough planes, possibly two per instructor or three planes for every two men, so that they are not held up in their schedules for lack of equipment. The program of flight instruction must be so arranged and so maintained that each instructor will be able to earn a salary in keeping with that of any young executive.

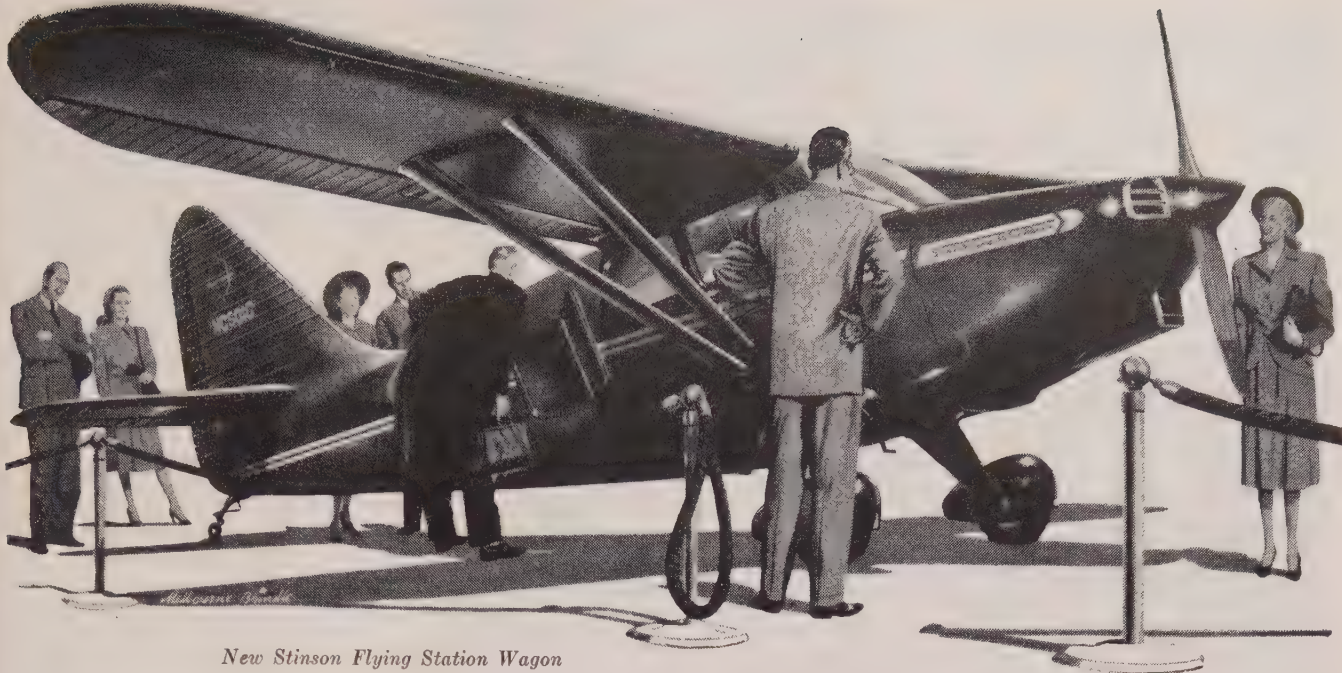
The operator must be practical in every angle of his contact with the public and his staff to sell his product—flight instruction. Many operators encourage their pilots to join at least one local civic organization. This gives the instructor plenty of opportunity to talk flying and this, in turn, often means more business.

The modern flight schools insist that their students be filled with a minimum of *mystery* regarding flying. Let them have "glamour" in their flying, "adventure" in learning a new skill but, say they, let there be no "mystery" about what they are doing, why what happens when they do which and how come. The students are kept as relaxed as possible. The idea of flying is kept routine rather than remarkable. It pays off—*big!*

One of the reasons that the modern flying school, operated on a business plan, is successful is that much of the student body is hand-picked. Businessmen are approached in their own offices. They are talked to as one businessman to another. They are shown the advantages of being able to fly in connection with their business as well as for pleasure. The operator shows them pictures of men of their own age or older who have learned to fly and who have obtained their private tickets at their school. Pictures of the school's equipment, maintenance shops, instructors, etc., tell another part of the story.

On the matter of safety and the subject of crashes in particular, the intelligent operator will be frank. Some operators keep every clipping of local crashes and the findings of the causes. These are shown without hesitation to any prospect that brings up the subject. The operator will show the prospective student *why* those accidents happened and will explain why perhaps a good 90 per cent of the local crashes were due to the

(Continued on page 57)



New Stinson Flying Station Wagon

It's here! Stepped up in range, speed, payload!

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New? Yes! But more important, the new 1948 Stinsons—of *proved* design—are America's most useful, most *practical*, personal planes.

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The spin-resistant Stinson is so easy to fly that beginners solo in ten hours or less.

Stinson has new flight instruction plan for business and professional men interested in saving time and money—Write W. H. Klenke, Jr., General Sales Manager, Stinson, Wayne, Michigan.

Hangar Flying

(Continued from page 16)

Radio Aid

PILOTS IN THE MIDWEST call radio station WHO of Des Moines, Iowa, the real pal of the plane owner. Every morning this station provides an excellent summary of weather conditions in Iowa and surrounding areas. Often, too, it includes detailed info on cold fronts, etc. Might be an idea for other radio stations to offer pilots a similar service for other parts of the country.

Flight Booklet

STANDARD OIL OF CALIFORNIA always has offered airmen lots of service. In their continuing effort to smooth the pathway of personal-plane pilots, Standard Oil of California recently came up with a convenient and handy-size booklet for keeping flight notes and records. In addition to providing space for jotting down flight details, expense records, etc., the booklet contains valuable reference on flight procedures. Log-book size, the booklet is available to pilots holding Chevron National Credit Cards. If you don't happen to have this credit card, we suggest you write Standard Oil of California, Aviation Division. The credit card and the booklet are well worth having.

Plane Rental Plan

AT LONG LAST something has been done about plane rental. For some time now pilots have been looking for some sort of an arrangement that permits plane rental on a reasonable basis, with a definite agreement regarding lay-over time on the ground . . . whether it be the result of bad weather or because a pilot wants to stay someplace longer than one day. Bob Boyer, manager of the Philadelphia Air Service at Wings Field, Ambler, Pennsylvania, has worked out a deal that is pleasing all of his businessmen pilots who rent airplanes for business travel. Figuring costs, maintenance, investment, insurance, gas and all other elements that are classed as "overhead," Boyer discovered that a rented plane that logged 3½ hours flying time a day paid a profit. He further reasoned, "why hangar the ship for the rest of the day if it's wanted for the trip?" Result: Keep the ship all day and all night. As long as your flying time totals 3½ hours out of 24, that's all you pay for. If you over-stay, it costs only 60¢ to 90¢ an hour ground time. Thus, four businessmen, including the pilot, can fly to a business meeting for 5¢ a mile each, direct to the destination. Proof of the pudding—the plan has proved so popular since its introduction three months ago that additional planes are on order to keep pace with the demand. The present stable includes a Stinson 150, several Ercoupes, a Seabee, Bellanca Cruisair and two Cessna's . . . all with two-way radio, instruments and night flying equipment.

Student Daze

A NEW PRIVATE PILOT, eager to go further in aviation, asked an experienced stunt flyer if he would teach him the comic flying routine known as "Flying Farmer." The ol' timer, wearing a serious expression, calmly replied, "Well . . . first, get your instructor's rating, and then go up with some students . . . and fly like they do!"

(Peggy Kay, Tampa, Fla.)



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Commuter

(Continued from page 33)

f.a.f. There was an additional \$509.44 for all risk insurance and \$38.40 for aircraft liability and property damage insurance, making a total outlay of \$6,067—one of the important reasons why I thought for a long time before buying.

Even at that time I intended keeping the plane for at least three years before looking for a more advanced model and nothing that has happened since has changed my mind. I'm well pleased with what I have.

Before taking delivery of the plane, we had been spending our time leveling the field, using a rented bulldozer to cut down small knolls here and there, and filling in gullies, largely by sweat, hand and family and neighborly cooperation. This field man-icuring cost \$43.00 and was worth every cent of it even though we had to spread the fill ourselves.

The trip back from Wayne worried me a bit because I was landing a little faster than necessary and I wondered whether I could really get the plane down on our field despite all our planning. Although the strip is 1,500 feet long and some trees had been cleared out at one end, the usable length is only about 900 feet and the width ranges from 90 feet near the center at the house to several hundred feet near the ends.

I have never been too proud to ask another man's opinion so when we landed at Concord Airport (N.H.) I was fortunate enough to run into Charles W. Shields, Jr., who was demonstrating Stinsons for airport manager William Martin. A flight check over the field by plane and a ground check on foot was enough for Charles to assure me that although there wasn't too much room to spare, landings could be made. I had to wait, though, for an additional week until the field was given its finishing touches.

When I went over to bring the plane in for the first landing, I wanted to try it alone, but Harriet, who had been with me to and from Wayne, insisted on coming along on this flight too, so Marilyn, Nancy and some visiting friends waited at the house for us.

I was busy getting the plane down for the first "once over lightly" when I happened to glance over to my left and saw about eight cars lined up and a group of people out on the edge of the landing strip. Word had evidently gotten around and the neighbors had come over to see Shaw perform in his one-ring circus.

I gave the plane the gun to come around again to boil it down a wee bit further back. The second pass would have been okay, but I decided on a third to get it in really short. I knew that if I messed it up many of the townspeople would be witnesses. I came back right down the center and luck was with me. The landing was perfect, right in front of the crowd, above half-way down the field. Probably the biggest thrill and certainly the most satisfying part of the day was this final accomplishment of what I had planned for years, and the family felt exactly the same way.

After several months of using the field, I know all its limitations. The narrow section in the center will be widened in time. The old barn right now is providing material

(Continued on page 52)



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Commuter

(Continued from page 51)

for a hangar so we won't have to tie the plane down in the open.

The prevailing wind is along the length of the field and at the end from which the approach is usually made there are trees about 25 to 30 feet high, with others even taller farther back. These are on the adjoining property and we have permission to take some down. At the other end there's no high growth, but the ground rises to a slight hill at the left and a gradual climbing turn is made to avoid this on take-off.

The landing and take-off problems that I knew would always be present no matter how we improved the field had a lot to do with my choice of a plane. The Stinson has excellent lateral maneuverability at low speeds just above the stall and the climbing turns at take-off and the low, long approach for landing can be made with little trouble. Since the *Voyager* has no tendency to float after the flare-out, as might happen in a lighter plane, once I have the plane throttled back and properly trimmed in a glide at 70 mph she will touch down just beyond the spot where the nose is pointed.

The field hasn't standard approach angle clearances at either sides or ends so no wind sock, tee or other wind indicator is allowed, the reasoning being that a strange pilot might make a disastrous landing on the sub-par field. Harriet has advance information when I fly up and usually has a smoky fire going to give me wind direction. Coming in for a landing I use a lower and longer approach than is customary around airports to give me more time to estimate and correct for drift. On rare occasions when crosswind conditions are too severe for a safe landing, Plymouth Airport, 10 miles away, makes a good alternate let-down. I usually have to fly over sometime during the weekend anyway for fuel.

Besides affecting my weekends, this flying hobby has changed my whole life around, business included. My plane is kept in a private hangar at Zahn's Airport at Amityville, L. I., when in New York. I prefer the private hangar as it also serves as a garage for my car when I'm on a flight and expect to be away for days. If I can leave the city early Friday afternoon, the flight to New Hampshire is made from Zahn's, but if I expect to leave late another routine is used. About 8 A.M. Friday I drive to Zahn's, put my car in the hangar and fly the plane to Teterboro Air Terminal in New Jersey and leave it there for the day. Then I go into the city by bus. Teterboro is only one-half hour from the office and, when I leave late, time is important.

Actually I prefer to fly up from Zahn's as there's less effort involved and it's only 217 miles to Alexandria against 224 from Teterboro. (Remember, it's 305 by automobile.) Then again, if flying conditions are not too good I can fly over a less hilly part of Connecticut than would have to be covered from Teterboro.

Flying up I usually cruise at 120 Indicated, rather than 125, to spare the engine and also to simplify navigation by getting a rough two miles per minute yardstick. With good weather and visibility I fly at about 2,500 feet and over rough terrain another

2,000 feet are added for a "handy" cushion.

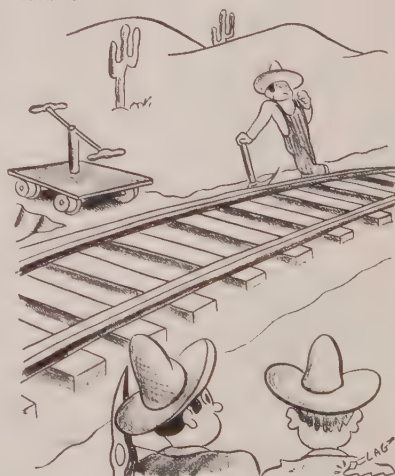
My trips to New Hampshire have given me excellent experience and briefing for the cross-country flights I expect to make with the family to other parts of the country during my vacations. When ceilings are low and there is poor visibility, then I really get practice. If contact minimums exist, I swallow my pride and when I get up into Connecticut the good Connecticut River, bless it, is followed (straightening the bends) to Claremont, N.H. There I switch off and sit at an altitude consistent with visibility over the auto road which is very familiar to me.

From Claremont east to the farm there is some fairly rugged country which includes Mt. Cardigan (3,121 ft.) about six miles west of Alexandria. On the run from Claremont in bad weather the peaks, although always at least a mile away on each side, sort of snarl at me through the mist, but the road follows the valley and there's no actual danger. Getting there is the main idea so I'm always willing to follow rivers and roads when my customary check points across country begin to disappear.

Up to now this flying chronicle has been practically all male Shaw, but the entire Shaw family is doing all right as far as other utility is concerned. Harriet has her solo permit and is now ready for her license. Marilyn and Nancy go with us on most flights and also plan to get their licenses in time. Last summer we made some trips down along the East Coast during my vacation and for future years our plans include flights to Florida, New Mexico, the Pacific Northwest and the West Coast. We'll use the plane to get to our general destinations and spot places from the air. Then, if there are no airports available at the places we want to visit, we'll land as closely as possible and go on by other means. I think that the Stinson's high-wing design is a virtue in this respect because cross-country visibility is excellent and that adds spice to any flying.

I'm a confirmed town-and-country commuter by air now and during summers, from here on out, my work routine will be radically changed. Being a commercial artist I planned my work so that I could be up at the farm most of the summer and just fly into New York once or twice a week. That's really having your cake and eating it. ✈

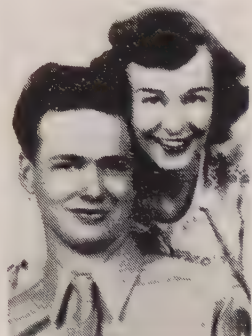
SKYWAYS



"... Thinks he's a pilot 'cause he rides the iron compass!"

ERCOUPE WINNERS

A few weeks ago the judges of SKYWAYS' *Ercoupe* Contest came out from behind mountains of letters and announced the winners of the *Ercoupes*. Because there were so many excellent entries, the judges informed us their job was one of the most difficult they'd ever undertaken. To the winners, therefore... our congratulations. And to those who did not win... our sincere hopes for better luck next time...



Mrs. John F. Miller Jr., of Louisville, Ky., winner of Contest 1: "Why I Want to Own an *Ercoupe*," is an affable young lady of 21 years who, when asked for biographical material, sent us a couple of lines about herself and several pages about her husband. Here are the facts: the Millers have been married for "... two years, three months, two days." Mr.

Miller served with the Air Forces during the war. He was a gunner on a B-24 with the 451st Bombardment Group of the 15th Air Force, and flew 18 missions over Germany and Austria. Mrs. Miller is employed as a secretary, and Mr. Miller is a draftsman during the day and attends night school at University of Louisville. Both are aviation enthusiasts.

Mr. Charles W. J. Curry of Minneapolis, Minn., was winner of *Ercoupe* in Contest 2: "What I Consider Ideal Features in a Personal Plane." Mr. Curry, a pilot for Northwest Airlines, was on flight to Orient at time of award. We'll run his picture in next issue.

Mr. Walter G. Schmitt of Miami Beach, Florida, was awarded an *Ercoupe* for his entry in Contest 3: "What I Consider Requisites for Private Pilot." Now a Major in Reserves, Mr. Schmitt was a navigator with ATC during the war. Mr. Schmitt is married, has 21 months old son, and operates a canning business in Florida. He plans to use his *Ercoupe* for business trips. Mr. Schmitt almost didn't get his plane... our telegram to him announcing his winning was salvaged from a debris pile after the hurricane. A neighbor saved the day by spotting the unopened telegram, and delivering it to him. By the way, Mr. Schmitt reports his inspiration for winning letter was "Malcolm D. Perkins, his pilot in ATC."



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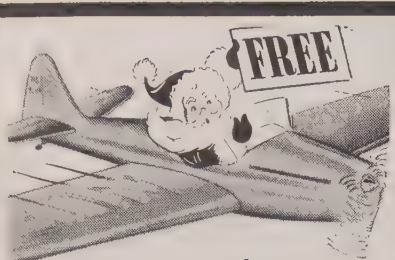
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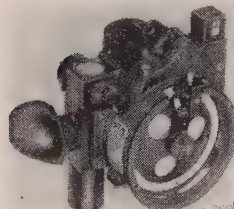
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Job Opportunities

(Continued from page 39)

Promotion—Junior or Assistant Meteorologist to Senior; Chief of Station, Division; Chief Meteorologist.

Traffic Control: (Airport and Airways)

Duties—Airport: handling of control tower operations, giving orders for take-offs and landings, and other instruction to planes in flight. Airway: handling of flights between flight control areas. (All under CAA and Civil Service)

Requirement—All above training level must have CAA certificate, including 1 year of military aviation communications or other specified experience. Permanent appointments on competitive civil service examination. Know airport, airway traffic and radio procedure, weather observation, FCC rules and CAR applicable to job, teletype symbols, weather sequence. Senior controller must also know instrument approach and departure procedure for area, air navigation facilities within 200 miles and airway traffic control procedure for area. Age . . . 21 yrs. minimum.

Salary—\$2,190 to \$2,798 per year. Senior Controllers, higher.

Promotion—Trainee, Assistant Controller, Senior Controller.

Aircraft & Engine Mechanic:

Duties—Inspection, servicing, maintenance of transports at terminals and in shops. Requirement—A & E mechanic's license.

Experience—Servicing and maintenance work with some specialization in instruments, radio or electrical systems, etc.

Salary—Apprentice: 60¢ to 70¢ per hour. Junior: 80¢ to \$1 per hour. Mechanic: \$1 to \$1.37 per hour. Crew Chief: \$275 to \$350 per month. Foreman, General Maintenance: \$350 to \$400 per month.

Promotion—Apprentice mechanic or mechanic's helper; mechanic; Crew or shop foreman; Chief Mechanic; Division Superintendent of Maintenance.

Engineers:

Duties—All types of engineering work with airports, airline maintenance, etc.

Requirement—Aeronautical Engineering degree from University or Technical school, with some specialization in air cargo operation, airport operation, etc.

Experience—Factory engineering experience preferred (aeronautical).

Salary—Varies with companies, but about same as that for engineers in aircraft companies. \$1800 to \$7200 per year.

Fixed-Base Operations

When Civil Aeronautics Administrator, T. P. Wright, predicted there'd be 400,000 private aircraft in 1955, this was 10 times the number that were operating in 1945. This increase in the number of planes is going to mean an expansion of airport facilities . . . and that, in turn, will mean more jobs within this so-called "Fixed-Base" category. It will mean more flying schools, more flight instructors, more repair facilities, more sales agencies—more jobs requiring technically trained personnel.

(Continued on page 56)

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Of SKYWAYS published monthly at New York, N. Y., for Oct. 1, 1947.
State of New York } ss.
County of New York }

Before me, a Notary Public in and for the State and county aforesaid, personally appeared J. Fred Henry, who, having been duly sworn according to law, deposes and says that he is the Publisher of SKYWAYS, and that the following is, to the best of his knowledge and belief, a true statement of the ownership, management (and if a daily, weekly, semiweekly or triweekly newspaper, the circulation), etc., of the aforesaid publication for the date shown in the above caption, required by the act of August 24, 1912, as amended by the acts of March 3, 1933, and July 2, 1946 (section 537, Postal Laws and Regulations), printed on the reverse of this form to wit:

1. That the names and addresses of the publisher, editor, managing editor, and business managers are: Publisher, J. Fred Henry, 444 Madison Avenue, New York 22, N. Y.; Editor, J. Fred Henry, 444 Madison Avenue, New York 22, N. Y.; Managing Editor, Doris N. Ahnstrom, 444 Madison Avenue, New York 22, N. Y.; Business Manager, Douglas B. McIntosh, 444 Madison Avenue, New York 22, N. Y.

2. That the owner is: (If owned by a corporation, its name and address must be stated and also immediately thereunder the names and addresses of stockholders owning or holding one percent or more of total amount of stock. If not owned by a corporation, the names and addresses of the individual owners must be given. If owned by a firm, company, or other unincorporated concern, its name and address, as well as those of each individual member, must be given.) J. Fred Henry and Gladys Lois Henry, dba Henry Publishing Company, 444 Madison Avenue, New York 22, N. Y.

3. That the known bondholders, mortgagees, and other security holders owning or holding 1 percent or more of total amount of bonds, mortgages, or other securities are: (If there are none, so state.) None.

4. That the two paragraphs next above, giving the names of the owners, stockholders, and security holders, if any, contain not only the list of stockholders and security holders as they appear upon the books of the company but also, in cases where the stockholder or security holder appears upon the books of the company as trustee or in any other fiduciary relation, the name of the person or corporation for whom such trustee is acting, is given; also that the said two paragraphs contain statements embracing affiant's full knowledge and belief as to the circumstances and conditions under which stockholders and security holders who do not appear upon the books of the company as trustees, hold stock and securities in a capacity other than that of a bona fide owner; and this affiant has no reason to believe that any other person, association, or corporation has any interest direct or indirect in the said stock, bonds, or other securities than as so stated by him.

5. That the average number of copies of each issue of this publication sold or distributed, through the mails or otherwise, to paid subscribers during the twelve months preceding the date shown above is (This information is required from daily, weekly, semiweekly, and triweekly newspapers only.)

(Signed) J. FRED HENRY,
Publisher

Sworn to and subscribed before me this 10th day of September, 1947.

(SEAL) STANLEY M. COOK
(My commission expires March 30, 1948)

Where to Fly

(Continued from page 14)

tie-down fee. Major repairs, 80, 91 Octane fuel. Meals at field. Taxi or private car to town 4 miles WSW. (Orlando Chart)

dar Keys Municipal Airport—Cedar Key. (Cl. 1). El. 5 feet. Hard surface runway, NE/SW. Boundary day markers. Wind cone. No tie-down fee. Fuel available. Cabins for transient pilots. Unlimited seaplane moorage area. Protected. (Orlando Chart)

earwater Municipal Airport—Clearwater. (Cl. 2). El. 73 feet. Soil and sod strips, E/W, NW/SE, SW/NE. Wind sleeve on hangar and center of field. No tie-down charge. Major repairs, 80, 91 Octane fuel. Meals and overnight facilities in town. Taxi to town 2 miles NE. (Miami Chart)

ew Field—Tampa. (Cl. 6) El. 21 feet. Concrete runways, N/S, E/W, NW/SE. Rotating beacon. Boundary, flood, obstruction, runway lights. Wind T. Hangar, major repair, 91 Octane fuel. Food bar at field. Taxi bus to town 5 miles W. (Miami Chart)

ter O'Knight Airport—Tampa. (Cl. 3) El. 8 feet. Paved runways, N/S, E/W, E/SW. Rotating beacon. Contact, boundary, flood obstruction and range lights. Hangars, control tower, major repairs, 80, 91 Octane fuel. Seaplane base also available. Taxi or bus to town 3 miles S. (Miami Chart)

arasota Airport—Sarasota. (Cl. 3) El. 25 feet. Sod and sand strips, E/W, N/S, NW/SE. Come on hangar. Boundary day markers, wind cone. Minor repairs, 80 Octane fuel. Taxi to town 2 miles E. (Miami Chart)

ewiston Airport—Clewiston (Cl. 2) Sod and sand strips. N/S, E/W, NE/SW. Boundary day markers. Hangars, Major repair, 91 Octane gas. Taxi to town 1 mile SW. (Miami Chart)

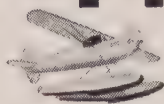
inter Haven Airport—Winter Haven (Cl. 1) El. 135 feet. Paved runways, N/S, E/W. Wind cone. Hangar, Major repairs, 80 Octane fuel. Taxi to town 3 miles NNW. Free transportation to hotel. Seaplane facilities reported to be available in connection with airport. (Orlando Chart)

nellas Field—St. Petersburg. (Cl. 4) El. 10 feet. Paved runways, E/W, N/S, NW/SE, E/SW. Rotating beacon. Course, range, boundary, runways flood and obstruction lights. Lighted wind T and tetrahedron. Control tower. Major repairs, hangars, 80, 91 and 100 Octane fuel. Meals and rooms available at field as well as in Largo and St. Petersburg. Bus to St. Petersburg 6 miles E. (Miami Chart)

radenton Airport—Bradenton. (Cl. 1) El. 20 feet. Turf strips, E/W, NE/SW, NW/SE. Wind sleeve on hangar, boundary markers. No tie-down fee. Minor repairs, 80 Octane fuel. Meals, hotel, tourist rooms, cabins at Bradenton .5 mile S. Taxi to town.

radenton (Sea)—At Municipal pier in Manatee River. Unlimited landing area, service.

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Editor's Note:—Airport information supplied in the "Where to Fly" columns is to be used as supplementary material only. For detailed information we suggest that you consult CAA's Airman Guide. We invite your criticism and correction of any errors that might occur. Your help will help us to provide personal pilots with accurate and necessary airport data.



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Remember Christmas!

In a few days now, Santa's going
to load his plane and take off.
Be sure your gift subscription to
SKYWAYS is among the presents.

See Page 50

Job Opportunities

(Continued from page 54)

Airport Manager:

Duties—Direction of all airport matters under control of airport owner. Coordination of airport operation with activities of airlines using field and private business at that field. General executive supervision.

Requirement—Minimum academic require- ment is a high school education. In this day of specialists, however, a graduate of course in Airport Operation at approved technical school is best. Some college experience.

Experience—Airport manager's job is not a beginner position. It is one that is worked up to via the general airport assistant's route. Business background and airline experience helpful. Mechanic or pilot's license an additional help.

Salary—Manager of a relatively small, private-flying field can get as much as \$450 per month. Managers of metropolitan fields, of course, get considerably more. Many of these big airport jobs come under Civil Service. Yearly salary runs between \$3600 (private field) and \$20,000 (for metropolitan field).

Flight School Operator:

Duties—Executive supervision of school oper- ations.

Requirement—High school education. Some college training preferred. Desirable also to have pilot's license, instrument rating, A & E license, etc.

Experience—Basic experience as flight in- structor. Business experience necessary, too.

Salary—Pay varies with size of operation and locality.

Promotion—Flight instructor to assistant Operator to Operator.

Aircraft & Engine Mechanic:

Duties—Repair and overhaul of airframe and engine, hydraulic and electrical systems. Inspection, service. On small airports, the A & E does just about everything, while at larger fields, he may specialize at various jobs.

Requirement—CAA certification as A & E mechanic.

Experience—Usually the more experience an A & E has the better. However, a newly licensed A & E who has demonstrated his ability should have no trouble in being accepted for employment.

Salary—Here again salaries vary with size of operation. For most part, however, a mini- mum is \$1 per hour, the maximum runs about \$5 per hour, while the average is nearer \$2.50 per hour. Or \$1800 to \$4200 per year.

Promotion—To Assistant Chief Mechanic to Chief Mechanic or other supervisory capac- ities.

Aircraft Salesman:

Duties—Demonstration and selling of aircraft.

Requirement—High school education desire- able, also some college training. Flight training with Commercial license, and in- strument rating preferable.

Experience—Selling experience preferred, and as much flying experience as possible.

Salary—Usually base pay plus a commission on sales. \$1800 to \$3600.

Military

Maintaining a strong air force requires more than just military personnel. There are, in fact, many thousands of civilians employed at Army and Navy research and development centers, repair stations, etc. Many engineers and highly skilled technicians are needed for this work. These jobs correspond to those within the aircraft manufacturing industry. They are, however, under Civil Service juris- diction. Anyone interested in employment in this field should consult his local Civil Ser- vice office for actual openings, specific re- quirements, etc. Training for these jobs can be procured at CAA-approved schools and colleges.

Military Aviation's civilian occupations are: Aeronautical Engineer, A & E Mechanic, Instrument Mechanic, Meteorologist, Radar Technician and Mechanic and Tower Per- sonnel.

Government

These jobs are with the Civil Aeronautics Administration, and require considerable ex- perience in both flying and technical fields. Employment is under Civil Service and via competitive examination in most cases. Space does not permit our listing requirements in form of education and experience. Therefore, we suggest that you consult your Civil Service office for specific information as to available openings, etc. A CAA-approved training school counselor also will be able to give advice regarding these Gov't positions. We might add that there are openings at this time for CAA aircraft communications and aircraft inspection work in other countries. Salaries range from \$2,644 to \$8,059 per year, depending on importance of job, qual- ifications, experience and seniority. Recently the CAA announced openings for 200 qual- ified single men as aircraft communicators in Alaska, with starting salaries of \$3,306, and additional earnings possible in all grades through overtime. Top salary is \$5,656 per year through promotion. Basic requirements are: ability to transmit and receive Inter- national Morse Code at minimum speed of 30 words per minute; to touch typewrite at 35 words per minute; 18 months of aeronau- tical communications experience or an ac- ceptable equivalent in education and experi- ence. Applicants, except in case of veterans, must be 18 to 40 years of age. Veterans ap- plying will receive special consideration.

Following is a list of the CAA jobs and their salaries:

Aerologist	\$3800 per year
Special Agent	\$3800 " "
Assistant Analyst	\$2600 " "
Analyst	\$3200 " "
Senior Analyst	\$3500 " "
Principal Analyst	\$3800 " "
Head Analyst	\$4600 " "
Junior Communications Operator	
.....	\$1440 " "
Assistant Communications Operator	
.....	\$1620 " "
Aircraft Communicator (Trainee)	
.....	\$2190 " "
Flight Supervisor	\$3500 " "
Senior Flight Supervisor	\$3800 " "
Ground-School Supervisor	\$3200 " "
Senior Ground-School Super	\$3500 " "
Assoc. Air Carrier Maint. Inspect.	
.....	\$2900 " "
Assoc. Air Carrier Inspector.	\$3500 " "

(Continued on page 59)

(Continued from page 48)

flying of reconverted war surplus and the remaining 10 per cent were due to pilot error.

As against these facts the operator will prove that his equipment is either new or perfectly maintained and inspected regardless of age, that his ships are properly licensed, maintained by CAA-licensed mechanics, and that his pilots are all mature, experienced and in many cases family men like the prospect. That takes care of the 90 per cent of the crash pie. The remaining 10 per cent due to pilot error is purely a matter for the prospect to decide for himself. The operator will show, by his own safety record, that good instruction makes for good and safe flying, and as a sign at Cub Haven Airport at Lock Haven, Penna., says in big block letters: **OLD PILOTS KNOW WHEN NOT TO FLY.** Mature prospects, long neglected by the flight-school operators will listen with interest to good sales talks and intelligent explanations of the art of flying, and they will appreciate the business-like approach.

Take for example, the students at the Brayton Flying Service mentioned before. A large percentage of the students enrolled at that organization are 40 years or older. When student prospects in that age group realize that so many others have earned their "tickets" with ease, many of them feel—and rightly—they too can make the grade.

There is money in the middle-aged student. Not only money from them in cash for lessons but from their responsibility in keeping their appointments on time, their ability and interest in making aircraft purchases after having learned to fly, and in their enthusiasm in encouraging others to take up the art, skill or whatever you choose to call it.

Earlier we mentioned that modern flight training was successful only insofar as there was a sort of "mutual fair practices" agreement between student and operator. Now let's look at the occupant of the rear seat and point out a few of his responsibilities to the school and his instructor. It stands to reason that the type of instructor employed today keeps his log books, records and student-progress charts up-to-date. It is the obligation of the student to help his instructor be able to do this with a minimum of effort.

The student (and here's where the older students pay off) must be prompt for flight appointments, notify the school when he must cancel, and do everything to make his own "learning" quick, easy, safe, and as inexpensive as possible. The hand-picked mature student will be anxious to do all of these to protect his investment in time and money.

Just for a moment let me point out that by no means am I urging the side-stepping of the younger student. They will always form a large percentage of the student body of any flight school. But the mature prospect either has been neglected or ignored for so long it seems about time we accented his advantages and possibilities for the sales force of any flight-instruction organization looking for more students.

Students owe it to their instructor (and their own checkbook) to pay attention to the instruction given them. And that doesn't mean to just *listen* to what the instructor has to say to them but to *hear* it. The student

PILOTS

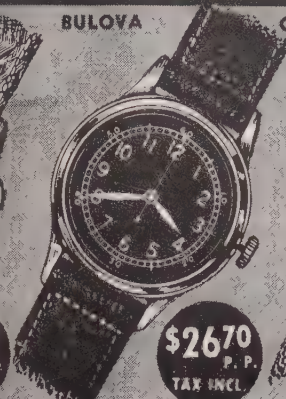
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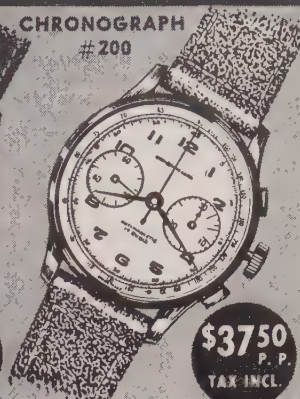
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should notice what makes an airman out of just a "flyer." It is consideration for others—upstairs and down. Learn your local airport rules, help keep your instructor's planes neat while you are using them, help other students, learn all there is to learn about this business of flying—and *remember it*. Do what your instructor says, not just something re-

sembling it. And *don't*, after a few entries in that log book, become an "expert."

Flight instruction is a big business based upon practical big business practices, not upon big hat sizes, and it's amazing how many times the other fellow knows more about it than you, be he student or instructor. So let's be practical—and humble.



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Job Opportunities

(Continued from page 56)

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Air Safety Investigator	\$3800	" "
Senior Air Safety Investigator	\$4600	" "
Junior Observer Meteorology	\$1752	" "
Junior Meteorologist	\$2900	" "
Meteorologist	\$2600 to \$5600	" "
Link Trainer Operator	\$2900	" "
Link Trainer Operator Instr.	\$3200	" "
Maintenance Supervisor	\$3200	" "
Senior Maintenance Superv.	\$3500	" "
Trainee Traffic Controller	\$2190	" "
Assist. Airport Traffic Con-		
troller	\$2433	" "
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Assist. Transportation Econo-		
mist	\$2600	" "
Assoc. Transportation Econo-		
mist	\$3200	" "
Transportation Economist	\$4600	" "
Senior Transportation Econo-		
mist	\$4600	" "
Principal Transportation Econo-		
mist	\$5600	" "

Related Occupations

In this category are those jobs that require extensive knowledge and understanding of aviation but do not always have *directly* to do with aircraft manufacturing, etc. Such occupations as advertising directorships, insurance selling, public relations and promotion work and some research are related to aviation in that they pertain to aeronautical matters. For example, an advertising directorship involves a sense of space buying as it pertains, in the case of an aviation advertising directorship, to aviation. Similarly aviation insurance selling is insurance selling as it pertains to aviation.

Job opportunities in these fields would, therefore, require basic experience and ability in the advertising, selling or public relations fields, plus a thorough knowledge of aviation. Rates of pay in these occupations are varied, depending upon the size of the company and the extent of their business. For the best information regarding these related occupations, contact your school counselor or an agency specializing in aviation.

These, then, are the Job Opportunities on the Ground side that are within reach of all those who have chosen aviation as a career. With the excellent training that is available today via the many aviation training schools, any young man or woman who wants his or her place in aviation can have it by studying for it and then going after it. Your training plus your desire for the job is a perfect combination that is bound to lead to success. ✈

NEXT MONTH

Job Opportunities in Aviation will take up employment categories listed under "Flight Jobs." As with "Ground Jobs," requirements, experience, salary, etc., will be included in detail. Those interested in present day and future career opportunities in aviation will not want to miss the January issue of . . .

SKYWAYS

PLANE SERVICE



EMERGENCY FUEL. The wide increase in floatplane flying has revived an old problem that used to plague land-based pilots—inadequate fuel servicing facilities. As a result, pilots in a jam sometimes have had to take emergency service from marine bases selling low octane marine fuel, or in some instances, standard automobile gasoline. Without proper precautions sub-standard fuels have been known to have vicious and costly kickbacks.

Planes using unauthorized fuels in a pinch are best flown at medium cruise rather than high cruising speeds and carburetor heat is vital because of a greater possibility of icing. Take-offs should never be forced, if possible. Intermittent detonation may be present even with moderate operation due to the instability of low-octane, high-vapor fuel. After the emergency flight, spark plugs should be checked for either excessive fouling or possible damage from detonation. Continued use of an unauthorized fuel may burn or foul valves and can also lead to a breakdown of the plane's entire ignition system.

One good reason for not using unauthorized gasoline except in cases of emergency is that insurance companies cast a suspicious eye at accidents resulting from "shady" operations.

COCKPIT "BOMBS." Flies, hoppers and other insects constitute a major evil around airports during the summer. Pilots usually attempt to drive them out of plane cabins by vainly whipping at the bugs with folded maps. The most compact and cleanest tool yet devised for this annoying job is an insect "bomb," the most common being the "aerosol" type used by the military during the war. Release the vapor in the cabin for a couple of seconds, leave all windows and doors closed for a minute or two and even the biggest horseflies give up. If you're flying south this winter, take one "aerosal" bomb with you.

CABIN HEATERS. An important cold weather check centers around the cabin heater muff that jackets the engine exhaust. Loose connections in the line from the muff will allow engine fumes to seep into the cockpit, but even more important,

small undiscovered breaks in the exhaust pipe under the muff may introduce carbon monoxide into the cabin. Because the removal of the muff for a check is a finicky job on some planes, occasionally it is carelessly skipped, a form of neglect which can build into a nice case of homicide. Winter is here and if a pilot finds himself drowsing off for no reason at all in flight, he better get fresh air fast, no matter how cold, and have that cabin-heater system looked at after landing. A headache after a routine flight in a closed-cabin job may also be a symptom of unsuspected exhaust fumes.

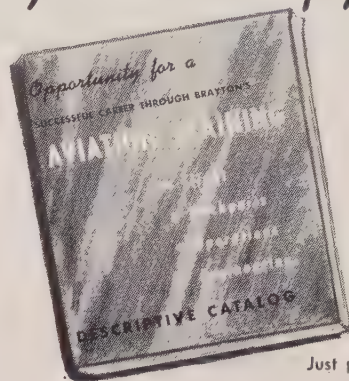
WHIPPING CABLES. External aileron, brake and other control cables have a tendency to loosen between inspection or under changing weather conditions and in flight whip against adjacent struts or surfaces. Where this condition has been neglected too long, cables have been known to snap under excessive strain. To deaden the whipping action that does the weakening job some smart mechanics place a tiny roll of friction tape around the cable, midway between fairleads or pulleys. Precaution: Check the controls thoroughly afterwards to make sure that the tape will not even come close to adjacent fairleads or other possible obstructions. This fix applies only to long, unsupported cables in the external wing or landing gear sections, and it does not excuse tightening cables properly when slack is found.

SELF-HELP COURTESY. Pilots like to growl, "Why can't we get some of that free attention that automobile service stations put out?" Actually, they do get it at some of the better run airports, but here's one odd tip for operators who can't afford to hire the extra man that service sometimes demands. One tank-type vacuum cleaner with the proper hose and nozzle and one long extension cord, both placed in a prominent spot at the front of a hangar with a sign telling pilots to clean the dirt and dust out of their plane cabins whenever they feel like it, for free, will do a lot of good.

Helping the pilot to help himself is a prime way to build distinctive aero service, and it'll mean more \$'s to operator.

—JERRY LEICHTER

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WANT LICENSED L-5 or L-6. Must be clean and reasonable. Write B. E. Godwin, Box 704, Big Bear Lake, California.

NEW PLANES FOR SALE

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USED PLANES FOR SALE

AERONCA CHAMPION—November 1946, 90 hours. EXCELLENT condition. Always hangered. ONLY \$1,600.00. Have bought Seabee so want to sell.—A. W. Hanson, 1605 St. Andrews Midland, Michigan.

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FOR SALE. BT-13 recently licensed, less than 150 hours since major. Complete dual instruments including hood, everything in perfect working condition. Airplane clean and in excellent shape. A bargain. Yanklowitz Waste Company, Inc., 223-227 Warren Street, Glens Falls, N. Y.

1946 CESSNAS: NC 76545, 140, radio, extras, 230 hrs., \$2650. NC 76078, 140, extras, only 62:45 hrs., \$28.50. NC 89102, 140, fully equipped, majored, \$2850. NC 89417, 140, radio, extras, majored, \$2650. NC 89996, 120, extras, 167 hrs. since major, \$2100. Jennings Bros., No. Grafton, Mass.

FOR SALE—CESSNA 140. Cost \$4000.00 new, with special McCauley Propeller, dual brakes, two way G. E. Radio, sensitive altimeter, ball bank and turn indicator, and clock. In perfect condition in every respect. Purchasing larger plane. Price \$2450. Write Cessna, Box 371, Jacksonville, Fla.

T-50 TWIN-CESSNA. Very good condition, many instruments, heavy wing, red, ONLY \$4750. Jennings Bros., No. Grafton, Mass.

1946 CULVER-V. 125 hours, excellent condition, \$2000, will trade for automobile. Robert Early, RR10, Box 298-B, Cincinnati 27, Ohio.

ERCOUPE—1946. Original owner. Starter, generator, metal prop, navigation lights, Kollsman directional compass, two-way radio, two mikes and head sets, 100 hours since new, just relicensed, always hangered, never in accident, \$2200. Dr. T. Mandy, 615 Medical Arts Building, Baltimore 1, Md.

ERCOUPE. All accessories, needs wings, propeller and one center control brace only. Rest in perfect condition. Best reasonable offer. Robert Shockelton, Ripley, Tenn.

ERCOUPE 1946, model 41Sc. Starter, Generator, navigation lights, 125 hours. Recent 100 hour inspection. Selling for \$2250. Original owner, J. T. Semans, 3852 Grand Central Terminal, New York 17, New York.

ERCOUPE. Delivered new October 1946, has only 48 hours. Sensitive altimeter, starter, nav. lights, \$2300. Write P. O. Box 424 or call Yankee Airways, Portsmouth, N. H.

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HOWARD DGA15P hp. Wasp, 1943. 5-place. 460 hours total since new. Licensed Day and Night instrument flight. Airline Radio. 3 receivers, 2 transmitters. Loop. Marker Beacon. Complete blind flight instruments. Flares. New custom interior. New 40-coat hand-rubbed finish in Dove Grey, Cardinal Red. Like brand new. \$8,750. 8440 Sunset, Hollywood Calif.

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STEARMAN PT-17. ONLY 168 hours since overhaul. Refinished red dope, silver. Newly finished propeller. Believe it cleanest in country. \$975.00. 8440 Sunset, Hollywood, Calif.

1944 STINSON V-77. New wings, ailerons and flaps, refinished in Stinson green 1 hr. ago. Never cracked. Lost time. Licensed 3 place, plus 692 pounds of cargo, excellent for cargo or charter work. Can very easily be converted to 5 place executive plane. \$3800. Inquire V. Lenhart, 204 E. Lexington St., Allentown, Pa., or Lehigh Airport, Penna.

STINSON. Aeromatic propeller, instruments, clock, seat covers, strut cuffs, loop, loudspeaker, etc. Outperforms others. Owner flown only. Polished. \$4,150.00. Also AT6, night instrument 153 hrs. \$1,350.00. Buddy Stewart, 830 Union St., New Orleans, La.

SR8B STINSON. 245 Lye., Smith controllable prop, just overhauled, many extras and instruments, 260 hrs. since major, no time since top, nice 5 place charter ship, make offer. Will trade for light ship. Jennings Bros., No. Grafton, Mass.

1946 TAYLORCRAFTS NC 43120, excellent, 175 since major, \$1550. NC 96421, good, about 250 hrs. \$1450. NC 96427, good, will be majored \$1450. NC 43260, good, extras, will be majored \$1550. NC 43481, excellent, extras, majored, \$1550. Jennings Bros., No. Grafton, Mass.

TAYLORCRAFT: 1946 BC12D-65 Continental, same as new, only 30 hours, wing tanks, radio, bank and turn, and conventional accessories. Never scratched and always hangered. \$2195.00, 15 hours free flight instruction. Wilbur Morton, Dayton, Tennessee.

1946 TAYLORCRAFT BC-12D Standard. 150 total hours. Sacrifice \$1500. Ogden Kiesel, P.O. Box 198, Lafayette, Calif.

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TIE DOWN KITS -D1—Complete kit in zippered case include 3 ropes, 18 spear heads—a life-time kit, \$8.00. Heath tie down kit, for light aircraft, \$4.50.

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CLASSIFIED ADVERTISING

(Continued from page 61)

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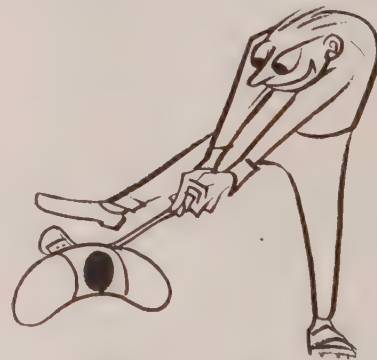
BUILD, FLY, BULLET RACEPLANE. Fast, Economical Low-Winged Lightplane. Blueprints, \$2.00. CORBCRAFT, 80 Maxwell, Rochester 11, N. Y.

Dilbert
(Continued from page 40)

Did you notice how your nose dropped on that turn? That, too, was natural and must be corrected. The reason it happened was that you applied rudder when the wings were banked. Rudder turns the nose of an airplane parallel to the axis of the wings. In this case your left wing being down, left rudder depressed the nose below the horizon, toward the left wing tip. You correct for this with the flippers. As you apply rudder, pull back on the stick just enough to keep the nose up on the horizon. But watch the horizon to see that you don't get the nose too high. This is worse than too low—it decreases your speed and a plane stalls at higher speeds in a turn.

Just Like Golf—While you think this over, I'm going to give the instructors a tip. It is to concentrate on only *one* point at a time. This isn't original with me; I picked it up from a golf instructor years ago. He used to say, "There is just one thing the matter with your game; you don't hold your hands right. Bring them around over the club, like this." After you practiced that awhile, he'd say, "Your back swing has gone haywire now; it's too flat." So you worked on the back swing. After that he went to your next worst fault. That way, he got your full attention on each fault and cleaned them up, one after another. This golf psychologist never stood in front of you when you started to swing and yelled, "Keep your head down, hold your elbows in, eye on the ball, pivot, follow through," and all the other golf jargon, which ties the poor duffer in knots.

Flying is much like golf; it's simply a question of mind over matter. Mainly it is mental and muscular coordination. You have to think, and do, a hundred things at once. The human mind is so limited, however, that the expert must simplify this complexity. One thing at a time, until it all comes natural.



"Flying is like golf . . ."

But now, let's get back to our turns. This time we will go to the right. Did you feel yourself being pushed around in the cockpit? I thought not. That's because you are not relaxed, and you are leaning away from the turn. You must relax and "ride with the plane." When you learn to do that, the forces acting on the plane will begin to telegraph messages to you. While it is true that you can't fly "by the seat of your pants," a pilot gets a lot of help from that source.

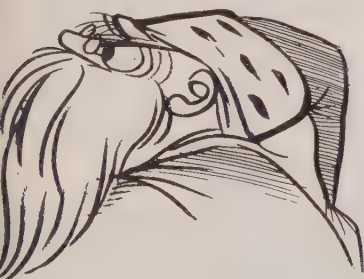
A skid is caused by the use of too much rudder in a turn. It can be detected in three ways: by noting that the nose is swinging around the horizon too fast for the amount

outside of the turn, if you are relaxed; in an open-cockpit plane, by feeling the strike the side of your face on the outside of the turn. You can correct for this by pulling up on the inboard rudder, by banking the turn more, or by a combination of two, depending on the attitude of your plane and what you wish to accomplish.

If you slip it is just the opposite. You are banking too much for your speed of turn. When you see it on the horizon, you feel yourself slipping toward the low wing and feel the low wing hit that side of your face. Correct for this by picking up the low wing with the rudder, by bringing the nose around faster with the rudder, or by a little of both. When your turns are correct, that is—right speed for the angle of bank, none of these deficiencies is evident. Then you merely feel as though you are being pushed down in your seat more heavily, due to centrifugal force. After your last turn you had a skid at one end and slip at another. You started with a steep bank because you had considerable bank on the plane before you started pushing the nose around. The nose must start turning simultaneously with the bank. The same in coming out of a turn. And the steeper the bank, the more you must bring the nose around. Your mistake occurred just about the time you got out of the banked. Here you came rushing in with too much rudder. It is surprising how little rudder is required in a turn; a little pressure at the start of the turn, practically none in the middle of a prolonged turn, and a very little re-udder during recovery. Also, the best way to always apply control pressures gently. You may wonder why we started out making medium turns, instead of gentle ones. Try making a 10° turn and you will see. Part of the time you were at 20° bank and part of the time you were level. In a 30° bank, this variation is due to air currents and your mistakes, but is so noticeable. By attempting the steeper turn first, you think you are doing better and it gives you more confidence. You will require less rudder and feel those slips.

Remember when I put the plane in a turn and my hands and feet off the controls, the plane tends to return to normal flight. It loses altitude and goes through some pretty wild swings before settling down, but if it is properly balanced and trimmed, the plane will gradually resume level flight. This means that if you get in a tight fix and have plenty of altitude, you can release all controls and let the airplane to resume some semblance of normal flight while you regain your wits. Then go below jumping altitude in this wretched condition, however!

Remember now, there is nothing wrong with your flying. Keep on making "S" turns and come way back to the field and do a million laps in your bunk tonight.

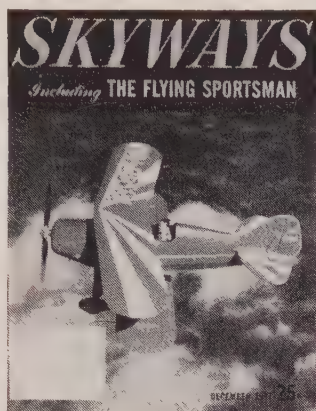


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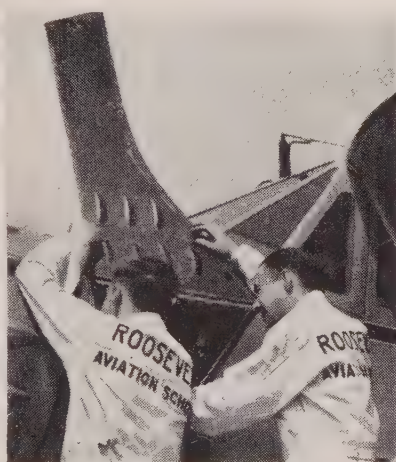
"Planes fly themselves better than student pilots can."



PICTURE CREDITS

COVER—This tiny acrobatic plane, designed by Curtiss Pitt and built at A & E Mechanics School at Stengel Field, Gainesville, Florida, is called "world's smallest acrobatic ship." Flown by P. C. Quigley, the ship is performing at air shows throughout the country. Powered by 85-hp engine, plane cruises at 130.

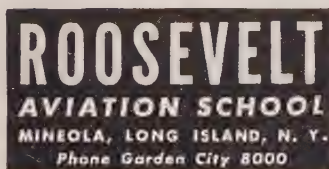
18, 19, 20—US NAVY, MAC, ACME, MARTIN & KELMAN, NORTH AMERICAN, RYAN; 21—GROENHOFF, USAAF, PRESS ASSOC., ACME; 23—BEECH; 24, 25, 26—KRAMER; 27, 28, 29—ROSS PIX; 32, 33—SHAW; 34, 35—FAIRCHILD, CAA, ARNOLD; 44—NORTHROP; 57—CURTIS, BOEING.



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and—1431 Oregon Street
Berkeley, California
(1,9,11,12)

Goble Aircraft Specialties, Inc.
40-22 Lawrence Street
Flushing, L.I., New York
(1,4xz,9,12)

Hartwell Aviation Supply Co.
3417 Crenshaw Blvd.
Los Angeles 16, California
(electrical supplies)

C. J. Hendry Co.
27 Main Street
San Francisco, California
(6)

G. W. Holmes Co.
196-208 East Gay Street
Columbus 15, Ohio
(1,4twyz,9,10,11)

Jack & Heintz Precision Industries, Inc.
Cleveland 1, Ohio
and
Solon Road
Bedford, Ohio
(7)

Lamson & Sessions Co.
1971 West 85th Street
Cleveland 2, Ohio
(6)

Lodwick Industries
Lodwick Airport
Lakeland, Florida
(3,9,11,12)

S. A. Long Co.
232 North Market Street
Wichita 1, Kansas
(1,6,7,11)

Maxwell Associates, Inc.
15 Moore Street
New York 4, New York
(1,4z,10)

New Mexico Aircraft Sales, Inc.
P.O. Box 157
West Mesa Airport
Old Albuquerque, New Mexico
(1,8,10)

Pacific Airmotive Corp.
2940 North Hollywood Way
Burbank, California
and
1628 McGee Street
Kansas City 8, Missouri
(1,3,4tuvxz,6,7,9,10,11,12)

Page Airways, Inc.
Municipal Airport
Rochester, New York
(1,2e,4tu,10,11)

Clarence E. Page
Hangar #3, Municipal Airport
Oklahoma City, Oklahoma
(1,2ce,3,4u,10,11,12)

Parker Service Agency Division
The Parker Appliance Co.
17325 Euclid Avenue
Cleveland 12, Ohio
and
6506 Stanford Avenue
Los Angeles, California
(6—Parker fittings)

Piedmont Aviation, Inc.
Smith-Reynolds Airport
Winston-Salem 1, North Carolina
(1,4u)

Pioneer Parachute Co., Inc.
Forest Street
Manchester, Connecticut
(9)

Ranger Aircraft Engines
Div. of Fairchild Engine and
Airplane Corp.
Farmingdale, L.I., New York
(4y)

Reid & Cook, Electrical Contractors
911 Walla Walla Avenue
Renton, Washington
(1,6,8,10,11)

Resort Airlines, Inc.
P.O. Box 1301
Southern Pines Airport
Southern Pines, North Carolina
(1,2e,10,11)

Schneck Engine Service & Supply
Washington Park Airport
Homewood, Illinois
(1,2h,4uy,10,11)

Schuster Electric Co.
321 Sycamore Street
Cincinnati 2, Ohio
(electrical supplies)

Snyder Aircraft Corp.
5036 West Sixty-third Street
Chicago 38, Illinois
(1,4f,7)

Thor Solberg Aviation Co.
Solberg-Hunterdon Airport
Whitehouse, New Jersey
(1,2h,10,11)

Stanco Company
1914 Canton Street
Dallas 1, Texas
(6)

Standard Parts & Equipment Co.
904 North Main Street
Fort Worth, Texas
(1,6,8,11)

Supply Division, Inc.
Lambert Airport
Robertson, Missouri
(1,6,7,9,11)

United Aero Service, Inc.
P.O. Box 1028
Delta Air Base
Charlotte, North Carolina
(1,2bceh,4tuz,7,10)

United Services for Air, Inc.
Box 409
Niagara Falls, New York
(2f)

Van Dusen Aircraft Supplies, Inc.
2004 Lyndale Avenue—South
Minneapolis 5, Minnesota
(1,4uwy,6,9,10,11,12)

Wallace Air Service, Inc.
P.O. Box 2203
Felts Field
Spokane, Washington
(1,2ce,4tuw,10)

Woodward Bros. Co., Inc.
9175 East Douglas Av.
Wichita 1, Kansas
(1,6)

KEY TO SYMBOLS

1. Accessories

2. Airframe Parts

- (a) Aeronca
- (b) AT-19
- (c) Beech
- (d) Boeing
- (e) Cessna
- (f) Curtiss
- (g) Douglas
- (h) Fairchild
- (i) North American
- (j) PBV

3. Engines

4. Engine Parts

- (t) Continental
- (u) Jacobs
- (v) Kinner
- (w) Lycoming
- (x) Pratt & Whitney
- (y) Ranger
- (z) Wright

5. Ground Handling Equipment

6. Hardware

7. Instruments

8. Miscellaneous

9. Parachutes

10. Propellers

11. Tires and Tubes

12. Tools and Test Equipment

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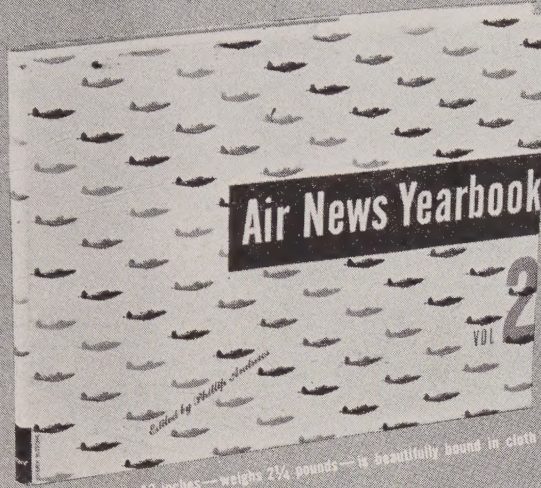
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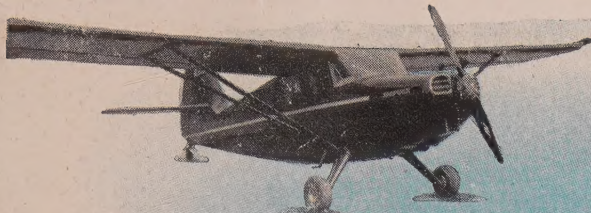
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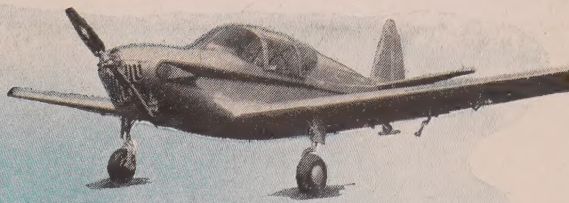
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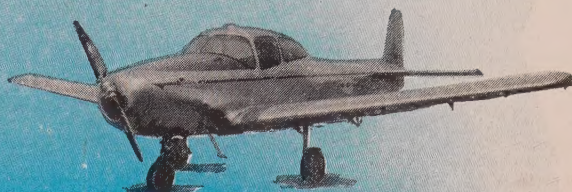
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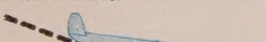
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